FIRS/C101 Rev 1

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FIRS/C101 Rev. 1

A GUIDE TO MARKS USED FOR TUNAS

AND

AN INVENTORY OF TUNA MARKING PROJECTS

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Compiled by

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FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
October 1970

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FAO Fisheries Circular *(FAO Fish. Circ.)*

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INTRODUCTION

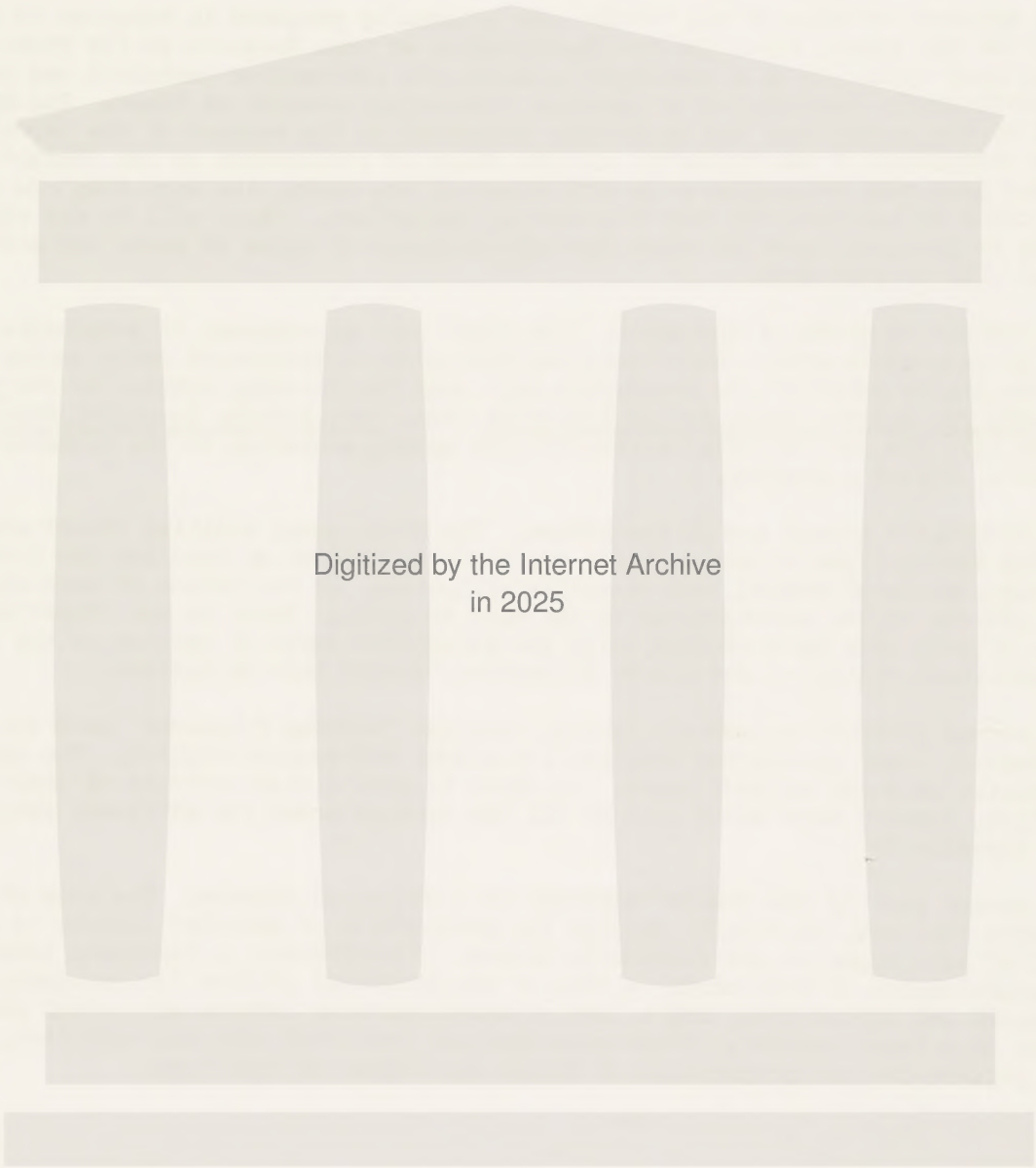
This updated revision of the "Guide" was originally prepared in response to a recommendation by the FAO Expert Panel for the Facilitation of Tuna Research at its First Session, Rome, 8-12 June 1964. It is a catalogue in which the information contained was compiled from a Questionnaire distributed to agencies conducting research on tunas. The updating was based on the suggestions and amendments submitted by the members of the Expert Panel and other recipients of the "Guide". At this stage of preparation of the "Guide" no attempt has been made to evaluate the efficiency of the marks, the ways they are applied, or the methods of handling the fish for marking operations. These will be the subject of a paper to be prepared lated in which the effectiveness of types of marks and methods of attachment will be discussed.

The "Guide" consists of two parts. The first part is composed of detachable sheets arranged by geographic area. Each sheet has been given a five-digit entry number. The first three digits refer to the geographic code used for indexing entries to the Current Bibliography for Aquatic Sciences and Fisheries (ref. Curr.Biblphy Aquat.Sci.Fish., 3(1): Ex 24 - Ex 35); the last two digits identify the agency, according to the alphabetic order of the title, within a country.

The detachable sheets are in two groups. The first group entitled "Mark" sheets give illustrated descriptions of marks, their application, methods of handling the fish, kinds of publicity, scale of reward, and reception office(s). At the bottom of each sheet the name and address of the manufacturer of the mark is given. There is one "Mark" sheet for each type of mark used in a country, with the scientific names of species on the left margin to facilitate filing of the sheets by species, should this be desired.

The second group of detachable sheets, entitled "Marking Programme" give the titles of the programmes, cost, sponsoring body(ies), subjects and species studied. The marking area is illustrated on a map on each sheet. In order to give a clear picture of their global distribution, summary maps which include all the marking areas for different species are given in Appendix I.

The second part of the "Guide" consists of a series of indexes. The size of the present version does not, in itself, justify the preparation of detailed indexes to facilitate retrieval of data shown on the detachable sheets. Nevertheless, a taxonomic index, a list of the manufacturers of tuna marks, a list of the principal offices for receiving particulars of marks and marked fish, and a list of distinguishing letters and serial numbers on tuna marks have been included. These supplementary retrieval aids may establish, on a trial basis, a pattern for the preparation of future catalogues of this type.



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FRs

TUNA MARKS

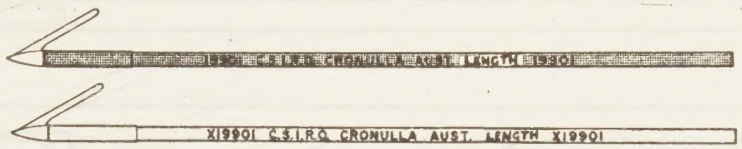
COUNTRY : Australia

61501

TITLE OF INSTITUTION : CSIRO, Division of Fisheries and Oceanography
P.O. Box 21
Cronulla, N.S.W.

DESCRIPTION

A dart (streamer) tag, made of 12 cm of yellow or blue plastic tubing, with moulded nylon dart-head inserted and glued into one end. It is serially numbered with a letter symbol followed by a 5-digit number in the case of the yellow tag, a 5-digit number in the case of the blue tag, and legend in black.



*This was a double tagging programme, and fish were tagged with both blue and yellow tags.

APPLICATION

Applicator is made of monel metal tube mounted in a wooden handle of required length. The forward end is slotted to take the stainless steel dart of the tag. Applicator with its enclosed dart tag is inserted diagonally and forward into the fish below the base of the dorsal fin.

- See figure overleaf -

METHOD OF HANDLING

RECOVERY, REPORTING AND RETURN

Publicity

Audio, visual and audiovisual methods
Direct correspondence/circular letters

Scale of Reward

$A 1.00 per tag

Reception Office

1) CSIRO, P.O. Box 21, Cronulla, N.S.W.
2) CSIRO Field Office, c/o Kraft Cannery, Eden, N.S.W.
3) CSIRO Field Office, Tasman Terrace, Port Lincoln, S.A.
4) Any State Fisheries Inspector

Symbols and serial number known to FAO

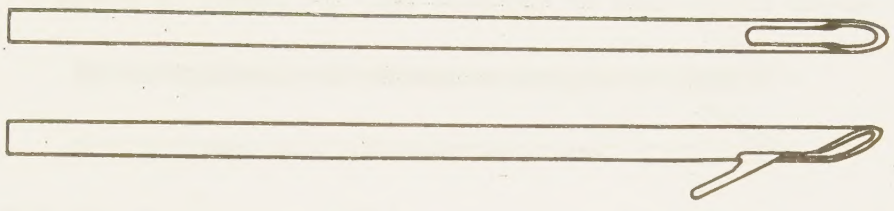
Letter and serial no.	CSIRO CRONULLA AUST. LENGTH.	(Yellow tag)
Serial no.	CSIRO CRONULLA AUST. LENGTH.	(Blue tag)

MANUFACTURER

Plastic Accessories Pty. Ltd.
24 Bowden Street, Alexandria
Sydney, N.S.W.
(darts)

Arthur E. King and Co.
Rear 135 King Street, Newtown
Sydney, N.S.W.
(streamers)

SPECIES MARKED
Thunnus thynnus



FRs TUNA MARKING PROGRAMMES

COUNTRY : Australia 61501

TITLE OF INSTITUTION : CSIRO, Division of Fisheries and Oceanography
P.O. Box 21
Cronulla, N.S.W.

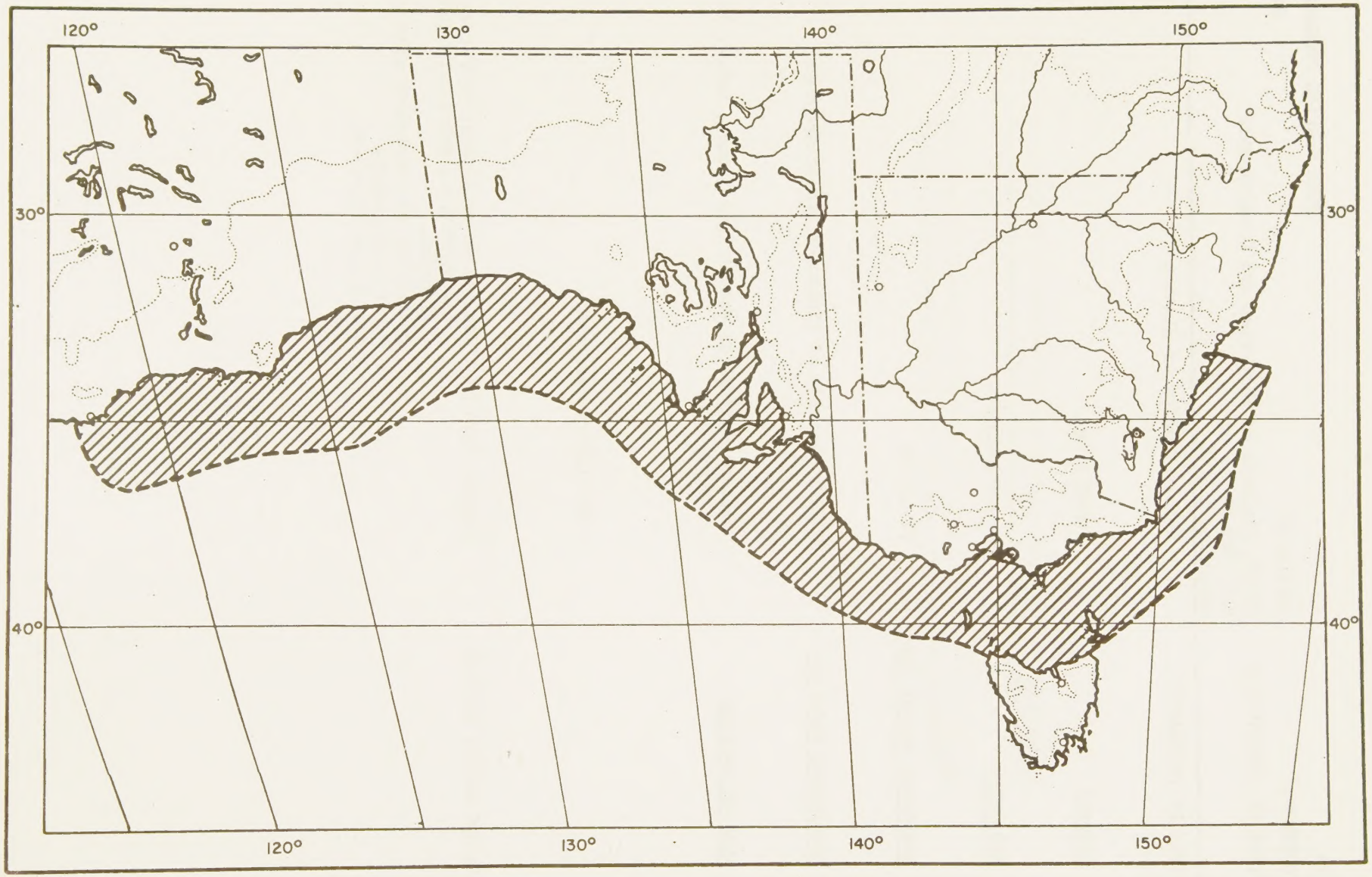
TITLE OF PROGRAMME	Double Tagging of Bluefin
Current	Indefinite
Projected	- continuing
Estimated annual cost	$A 18,000
Sponsoring body(ies)	CSIRO, Division of Fisheries and Oceanography
Area of Marking	Southern Australian waters from Sydney, N.S.W. to Albany, W.A.

- See figure overleaf -

SUBJECT MATTER STUDIED

Thunnus thynnus : Estimation of mixing, dispersal and migration, and stock identification.
Estimation of population size and mortality rates.
Estimation of growth.

SPECIES MAP
Thunnus thynnus



Coverage of present marking program

FRs

TUNA MARKS

COUNTRY : Canada

21701

TITLE OF INSTITUTION : Fisheries Research Board of Canada
Biological Station
St. Andrews, New Brunswick

DESCRIPTION

A dart tag made of 14 or 24 cm length of transparent plastic tubing, with moulded nylon dart-head inserted and glued into one end. The transparent tubing contains a 10 cm length of yellow interior tubing, serially numbered with 3 or 5-digit number and legend marked in black ink. The open end of the exterior tubing is sealed with a plug.

APPLICATION

Applicator is made of hollow stainless steel needle mounted in a wooden handle and with a bevelled forward end. Applicator with its enclosed tag is inserted diagonally and forward into the fish below the base of the dorsal fin.

- See figure overleaf -

METHOD OF HANDLING

Small fish held in a dip net or trough

RECOVERY, REPORTING AND RETURN

Publicity

Audio methods
Direct correspondence/circular letters

Scale of Reward

$10.00 per tag

Reception Office

Fisheries Research Board of Canada
Biological Station
St. Andrews, N.B.

(or any office of the Minister of Fisheries for forwarding to St. Andrews)

Symbols and serial number known to FAO

Nos. 01001-01500 and 101-300 REWARD $10 FISHERIES RESEARCH CANADA ST. ANDREWS, NB

MANUFACTURER

Floy Tag Manufacturing Co.
2909 Blakeley Street
Seattle
Washington 98105

SPECIES MARKED

Thunnus thynnus
Thunnus albacares
Thunnus obesus
Euthynnus pelamis
Sarda sarda

FRs

TUNA MARKS

COUNTRY : Canada

21701

TITLE OF INSTITUTION : Fisheries Research Board of Canada
Biological Station
St. Andrews, New Brunswick

DESCRIPTION

A dart tag, made of 15½ cm of yellow plastic tubing, with stainless steel dart-head clamped onto one end. It is serially numbered with a 3 or 5-digit number and legend in black.

APPLICATION

Applicator is made of steel bar mounted in a wooden handle of required length. The forward end is slotted to take the stainless steel dart of the tag. Applicator is inserted diagonally and forward into the fish below the base of the dorsal fin.

- See figure overleaf -

METHOD OF HANDLING

Small fish held in a dip net or trough or large fish either on longlines or swimming free without removal from the water.

RECOVERY, REPORTING AND RETURN

Publicity

Audio methods
Direct correspondence/circular letters

Scale of Reward

$10.00 per tag

Reception Office

Fisheries Research Board of Canada
Biological Station
St. Andrews, N.B.

(or any office of the Minister of Fisheries for forwarding to St. Andrews)

Symbols and serial number known to FAO

Nos. 03001-04000 and 301-500 REWARD $10 FRB ST. ANDREWS N.B. CANADA

MANUFACTURER

Floy Tag Manufacturing Co.
2909 N.E. Blakeley Street
Seattle
Washington 98105 U.S.A.

SPECIES MARKED

Thunnus thynnus
Thunnus albacares
Thunnus obesus
Euthynnus pelamis
Sarda sarda

FRs

TUNA MARKS

21701

COUNTRY : Canada

TITLE OF INSTITUTION : Fisheries Research Board of Canada
Biological Station
St. Andrews, New Brunswick

DESCRIPTION

The capsule mark is a moulded nylon tube of $3\frac{1}{2}$ cm connected to a stainless steel dart-head with a 12 cm long monofilament nylon fibre. The capsule contains a letter of instructions and is sealed with a red or yellow screw-in plug.

APPLICATION

Applicator is made of steel bar mounted in a wooden handle of required length. The forward end is slotted to take the stainless steel dart of the tag. Applicator is inserted diagonally and forward into the fish below the base of the dorsal fin.

- See figure overleaf -

METHOD OF HANDLING

Small fish held in a dip n et or trough, or large fish either on longlines or swimming free without removal from the water.

RECOVERY, REPORTING AND RETURN

Publicity

Audio methods
Direct correspondence/circular letters

Scale of Reward

$10.00 per tag

Reception Office

Fisheries Research Board of Canada
Biological Station
St. Andrews, N.B.

(or any office of the Minister of Fisheries for forwarding to St. Andrews)

Symbols and serial number known to FAO

A.1001 to A.6000

MANUFACTURER

F.C. Philips Inc.
Stoughton
Mass.
U.S.A.
(capsules or darts)

Floy Tag Manufacturing Co.
2909 N.E. Blakeley Street
Seattle
Washington 98105 U.S.A.
(capsules or darts)

Pilgrim Plastics Co.
278 Babcock Street
Boston
Mass. 02715, U.S.A.
(messages)

SPECIES MARKED

Thunnus thynnus

Thunnus albacares

Thunnus obesus

Euthynnus pelamis

FRs

TUNA MARKING PROGRAMMES

21701

COUNTRY : Canada

INSTITUTION : Fisheries Research Board of Canada
Biological Station
St. Andrews, New Brunswick

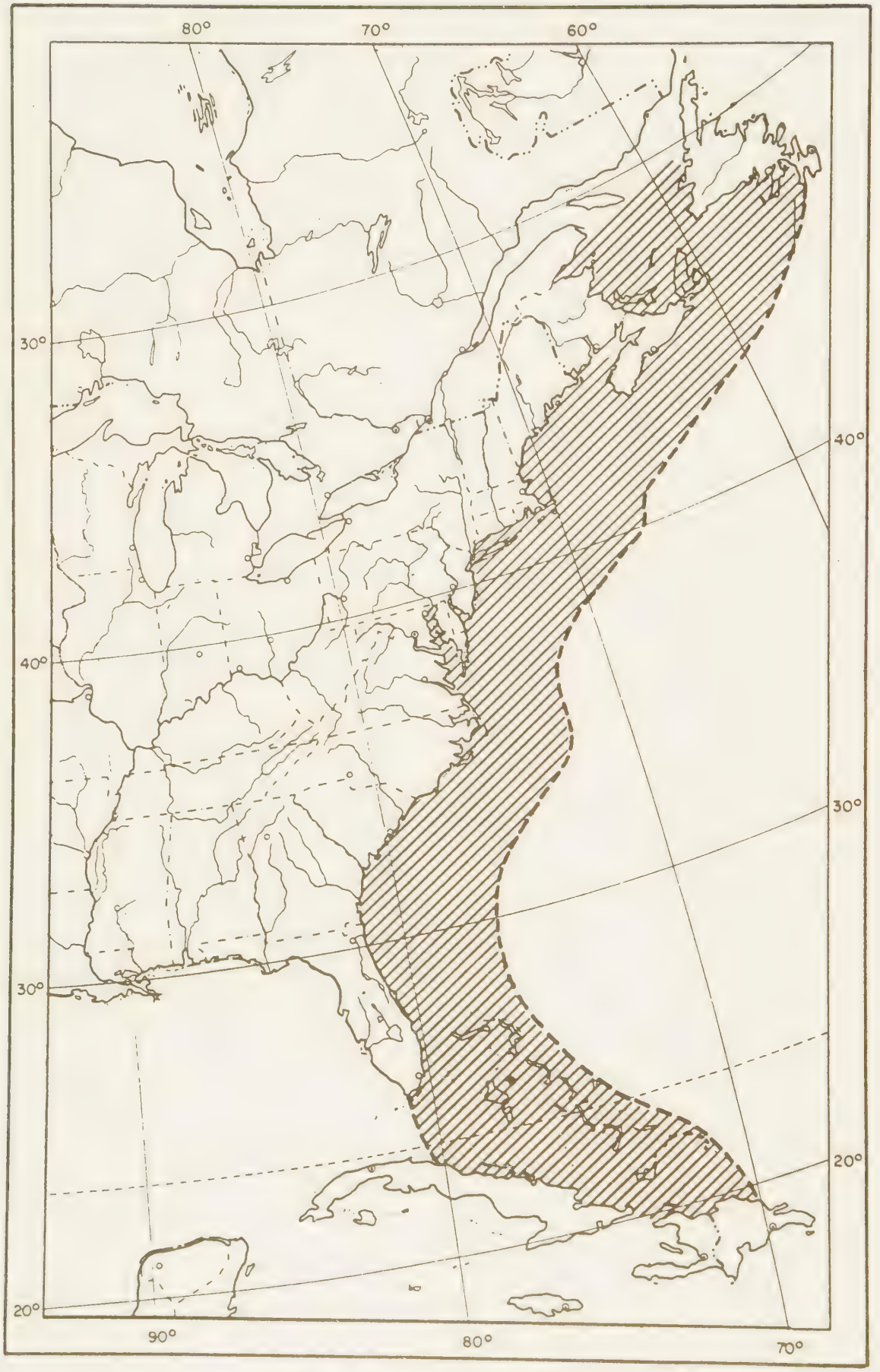
TITLE OF PROGRAM	Longlined Tuna
Current	Year long since 1964
Projected	- continuing
Estimated annual cost	-
Sponsoring body(ies)	Fisheries Research Board of Canada
Area of Marking	N.W. Atlantic (Caribbean to Newfoundland)
	- See figure overleaf -
SUBJECT MATTER STUDIED	Thunnus thynnus : Estimation of mixing, dispersal and migration, and stock identification
	Thunnus albacares : - do -
	Thunnus obesus : - do -

SPECIES MARKED

Thunnus thynnus

Thunnus albacares

Thunnus obesus



Coverage of present marking program

FRs

TUNA MARKING PROGRAMMES

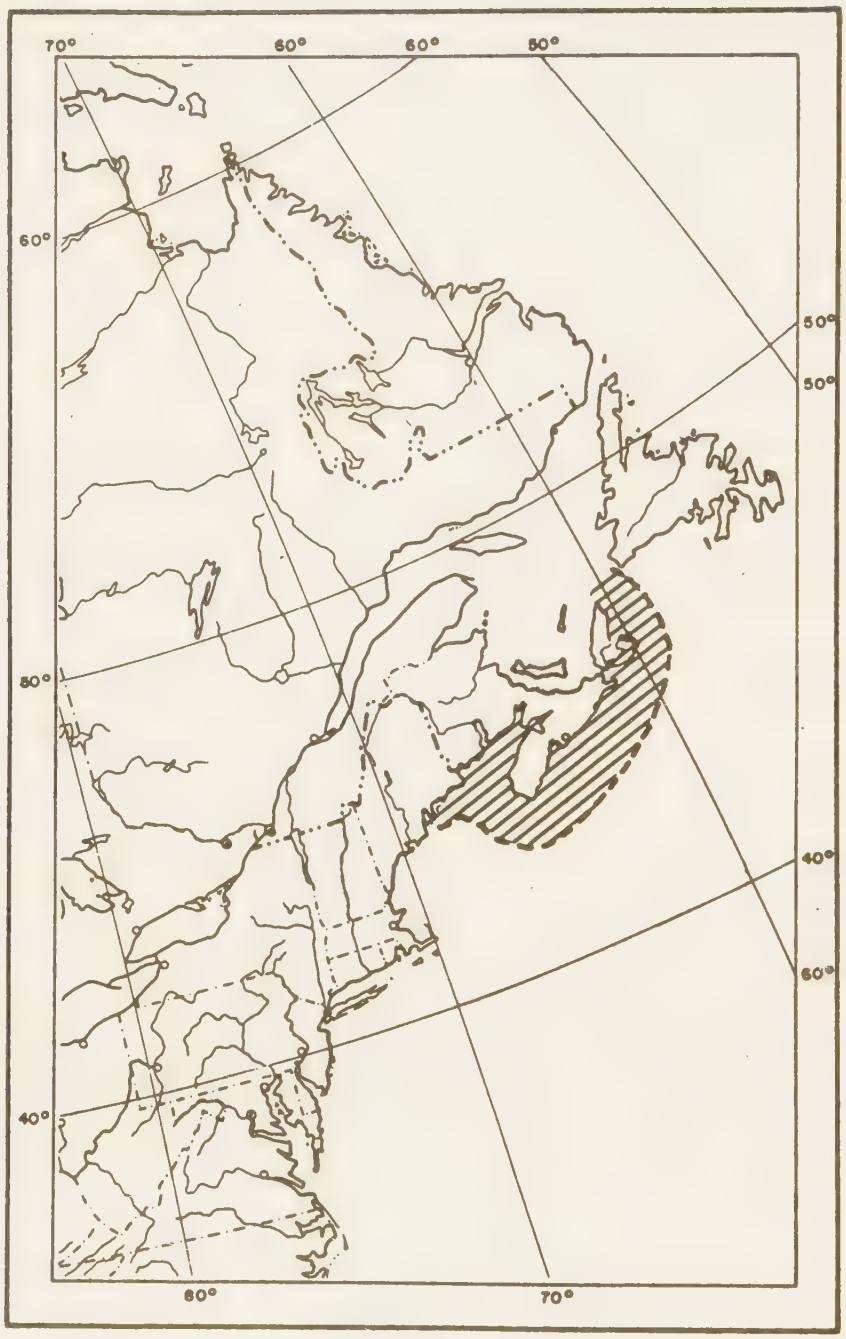
COUNTRY : Canada

21701

TITLE OF INSTITUTION : Fisheries Research Board of Canada
Biological Station
St. Andrews, New Brunswick

TITLE OF PROGRAMME	"Giant" (Nova Scotia) Bluefin tagging
Current	July-September since 1963
Projected	- long-term, continuing
Estimated annual cost	$5,000
Sponsoring body(ies)	Fisheries Research Board of Canada
Area of Marking	St. Margaret's Bay, N.S., proposed extension to Yarmouth County, N.S., Prince Edward Island and Newfoundland
	- See figure overleaf -
SUBJECT MATTER STUDIED	Thunnus thynnus : Estimation of mixing, dispersal and migration, and stock identification. Estimation of growth.

SPECIES MARKED
Thunnus thynnus



Coverage of present marking program

FRs

TUNA MARKING PROGRAMMES

21701

COUNTRY : Canada

TITLE OF INSTITUTION : Fisheries Research Board of Canada
Biological Station
St. Andrews, New Brunswick

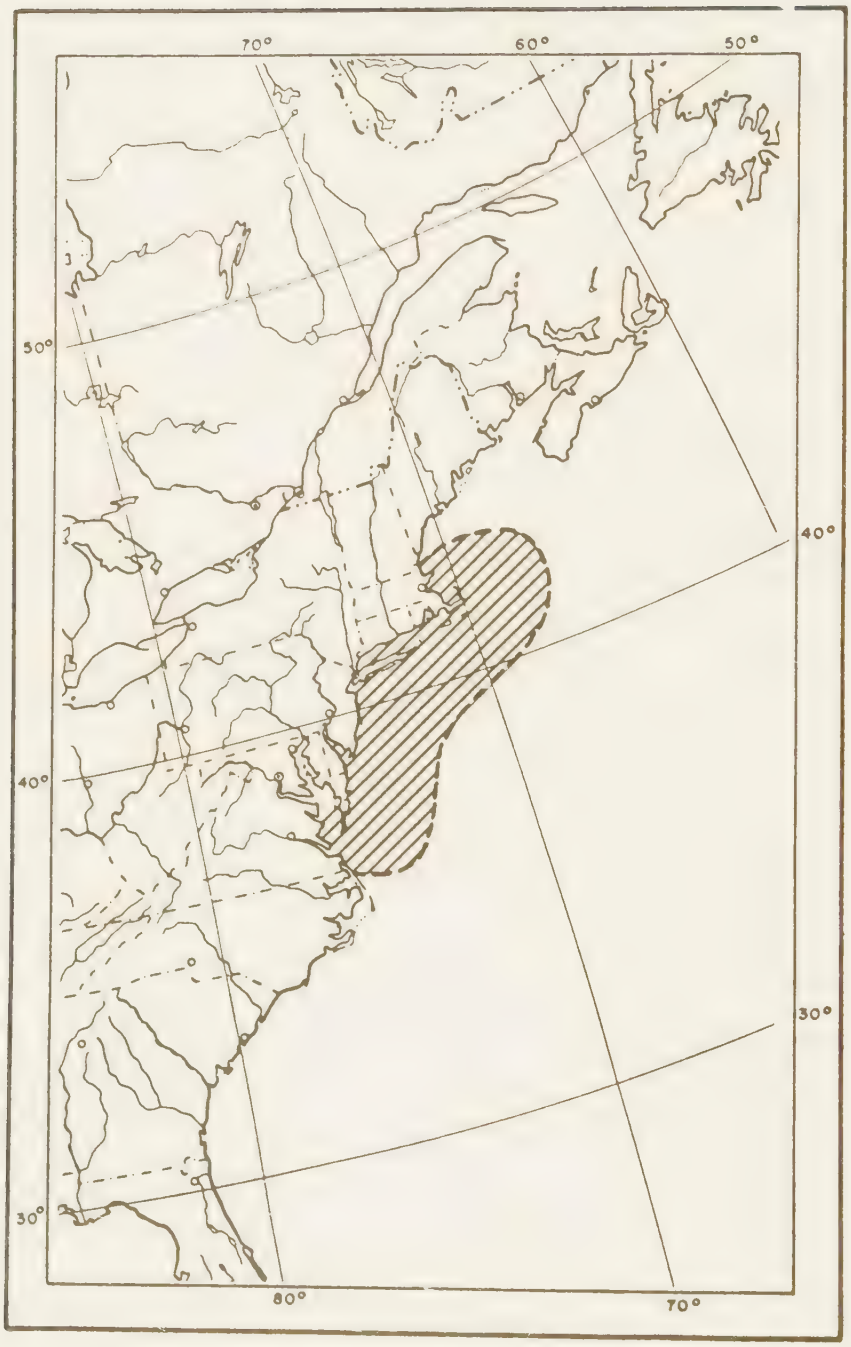
SPECIES MARKED
Thunnus thynnus
Thunnus albacares
Euthynnus pelamis
Sarda sarda

TITLE OF PROGRAMME	Purse Seine Tuna
Current	July-September 1964-5, All year since 1967
Projected	- continuing
Estimated annual cost	-
Sponsoring body(ies)	Fisheries Research Board of Canada
Area of Marking	Gulf of Guinea, E. coast U.S.A., W. coast S. America (Peru & Ecuador)

- See figure overleaf -

SUBJECT MATTER STUDIED

Thunnus thynnus	: Estimation of mixing, dispersal and migration, and stock identification. Estimation of population size and mortality rates. Estimation of growth.
Thunnus albacares	: - do -
Euthynnus pelamis	: - do -
Sarda sarda	: Estimation of mixing, dispersal and migration.



Coverage of present marking program

FRs

TUNA MARKS

21701

COUNTRY : Canada

TITLE OF INSTITUTION : Fisheries Research Board of Canada
Biological Station
St. Andrews, New Brunswick

DESCRIPTION

A dart tag made of 15 cm of yellow plastic tubing bearing a serial number and legend in black, threaded on 30 cm of nylon monofilament attached to a stainless steel dart. The ends of the monofilament are crimped flat.

APPLICATION

Applicator is made of steel bar mounted in a wooden handle of required length. The forward end is slotted to take the stainless steel dart of the tag. Applicator is inserted diagonally and forward into the fish below the base of the dorsal fin.

- See figure overleaf -

METHOD OF HANDLING

Small fish held in a dip net or trough, or large fish either on longlines or swimming free without removal from the water.

RECOVERY, REPORTING AND RETURN

Publicity

Audio methods
Direct correspondence/circular letters

Scale of Reward

$10.00 per tag

Reception Office

Fisheries Research Board of Canada
Biological Station
St. Andrews, N.B.

(or any office of the Minister of Fisheries for forwarding to St. Andrews)

Symbols and serial number known to FAO

03701-03800 and B01001-02000

MANUFACTURER

Floy Tag Manufacturing Co.
2909 N.E. Blakeley Street
Seattle
Washington 98105 U.S.A.

SPECIES MARKED

Thunnus thynnus

Thunnus albacares

Thunnus obesus

Euthynnus pelamis

FRs

TUNA MARKS

54301

COUNTRY : Italy

TITLE OF INSTITUTION : Centro Sperimentale per l'Industria della Pesca e dei Prodotti del Mare
Via Garibaldi 136, Messina

DESCRIPTION

A dart tag made of $18\frac{1}{2}$ cm of yellow plastic tubing, with moulded nylon dart-head inserted and glued into one end. It is serially numbered with a letter symbol, 4-digit number and legend in black.

APPLICATION

Applicator is made of hollow stainless steel needle, O.D. 5 mm, with bevelled end. Applicator with its enclosed dart tag is inserted diagonally and forward into the fish below the base of the dorsal fin.

- See figure overleaf -

METHOD OF HANDLING

Fish are held in a V-shaped trough made of plywood. The insides of the trough are lined with sponge rubber. The rubber is covered with plastic sheeting. Inset in one side of the trough is a meter stick.

- See figure overleaf -

RECOVERY, REPORTING AND RETURN

Publicity
Visual methods
Direct correspondence/circular letters

Scale of Reward
Letter of thanks - Reward $5 (Lit. 3,000)

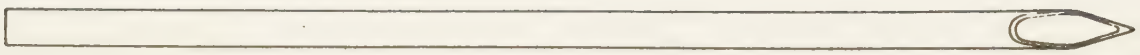
Reception Office
Centro Sperimentale per l'Industria della Pesca, Sezione Scientifica
Via Garibaldi 136, Messina

Symbols and serial number known to FAO
Letter, serial no. CENTRO SPERIMENTALE PESCA - MESSINA - ITALY

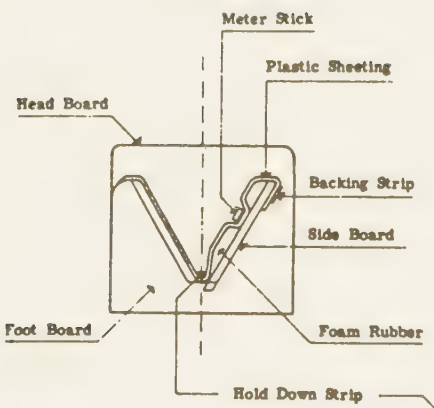
MANUFACTURER

INSUL-TAB Co. Inc.
160 Cross Street
Winchester, Mass.
U.S.A.

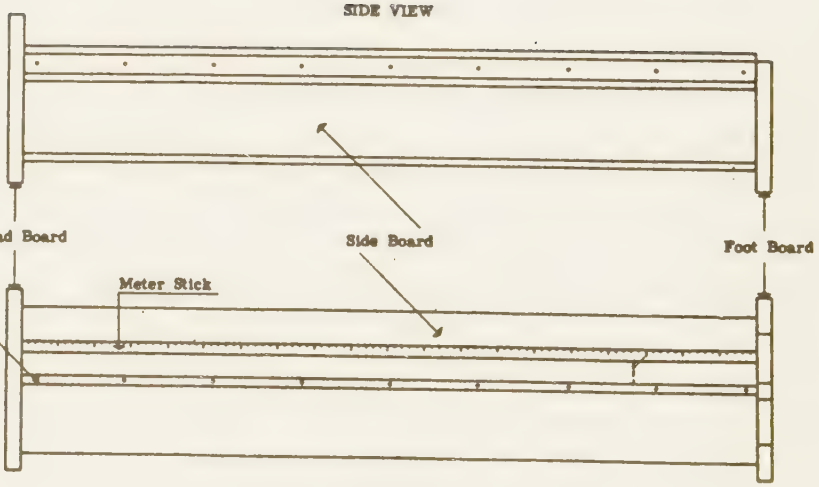
SPECIES MARKED
Thunnus thynnus
Thunnus alalunga



END VIEW



SIDE VIEW



TOP VIEW

FRs

TUNA MARKING PROGRAMMES

COUNTRY : Italy

54301

TITLE OF INSTITUTION : Centro Sperimentale per l'Industria della Pesca e dei Prodotti del Mare
Via Garibaldi 136, Messina

TITLE OF PROGRAMME - PROSECUZIONE DELLA CAMPAGNA DI MARCATURE DEI GIOVANI TONNIDI E PESCI-SPADA

Current - Programma marcature Tonni genetici e post - genetici

Projected
1 - 31 October 1966
1 October - 15 November 1967
1 May - 15 July 1968
1 - 31 October 1968

Estimated annual cost
$4,000, for young tunas;
$15,000, for big tunas, caught by tuna-traps

Sponsoring body(ies) Assessorato Industria e Commercio della Regione Siciliana

Area of Marking Tyrhenian Sea and Ionian Sea

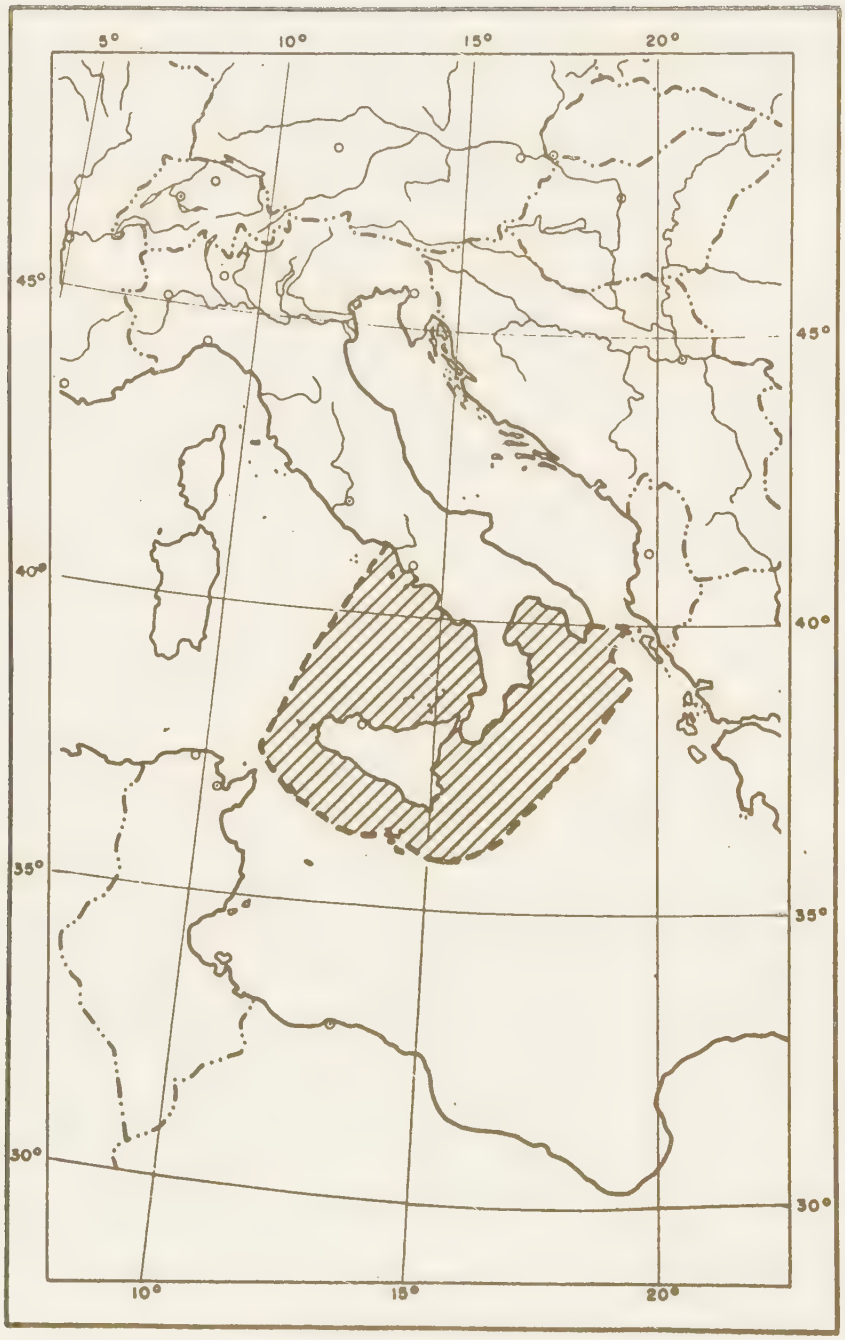
- See figure overleaf -

SUBJECT MATTER STUDIED

Thunnus thynnus :
- Estimation of mixing, dispersal and migration, and stock identification.
- Estimation of population size and mortality rates.
- Estimation of growth.

Thunnus alalunga :
- Estimation of mixing, dispersal and migration.
- Estimation of growth.

SPECIES MARKED
Thunnus thynnus
Thunnus alalunga



Coverage of present marking program

FRs

TUNA MARKS

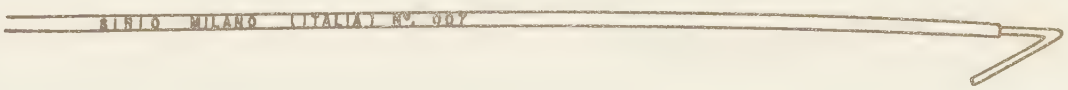
COUNTRY : Italy

54302

TITLE OF INSTITUTION : Societa Informazioni Ricerche Ittiche Oceanografiche
Via Vigoni 11 (S.I.R.I.O.)
Milan

DESCRIPTION

A dart tag made of 25 cm of yellow plastic tubing, with moulded nylon dart-head inserted into one end. It is serially numbered with 3 digits and legend in black.



Sarda sarda

APPLICATION

Applicator is made of hollow stainless steel needle, with bevelled forward end. Applicator with its enclosed dart tag is inserted diagonally and forward into the fish below the base of the dorsal fin.

- See figure overleaf -

METHOD OF HANDLING

Marking is carried out by two persons, one of whom holds the fish firmly and the second person measures the length with an ordinary steel meter-band and applies the dart tag to the fish.

RECOVERY, REPORTING AND RETURN

Thunnus alalunga

Publicity

Visual methods
Direct correspondence/circular letters

Scale of Reward

Letter of thanks. $35.00 per tag.

Reception Office

Societa Informazioni Ricerche Ittiche Oceanografiche (S.I.R.I.O.)
Via Vigoni 11
Milano

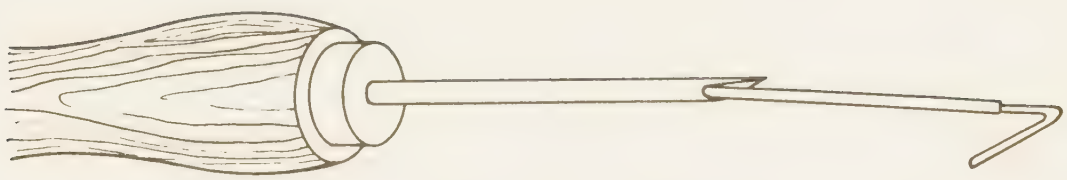
Symbols and serial number known to FAO

MANUFACTURER

INSUL-TAB Inc.
260 New Boston Street
Woburn, Mass. 01802
U.S.A.

SPECIES MARKED

Thunnus thynnus



FRs

TUNA MARKING PROGRAMMES

COUNTRY : Italy 54302

TITLE OF INSTITUTION : Societa Informazioni Ricerche Ittiche Oceanografiche
Via Vigoni 11 (S.I.R.I.O.)
Milan

TITLE OF PROGRAMME: Campagna di marcatura di tonni (Thunnus thynnus) alalunghe (Thunnus alalunga) delle coste italiane

Current: September - October 1967

Projected: May - September 1968

Estimated annual cost: $10,000

Sponsoring body(ies): -

Area of Marking: Ligurian Sea

- See figure overleaf -

SUBJECT MATTER STUDIED

Thunnus thynnus : Estimation of mixing, dispersal and migration.
Estimation of growth.

Thunnus alalunga : Estimation of mixing, dispersal and migration.
Estimation of growth.

Sarda sarda : Estimation of mixing, dispersal and migration.
Estimation of growth.

SPECIES MARKED
Thunnus Thynnus
Thunnus alalunga
Sarda sarda

Coverage of present marking program

FRs

TUNA MARKS

45101

COUNTRY : Japan

TITLE OF INSTITUTION : Mie Prefectural Fishery Experimental Station
Hamajima-cho, Shima-Gun
Mie-ken, Japan

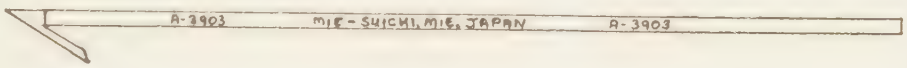
SPECIES MARKED

Euthynnus pelamis

Thunnus alalunga

DESCRIPTION

A dart tag, made of $7\frac{1}{2}$ cm of transparent polythene tubing, with moulded nylon dart-head inserted at one end. The transparent tubing contains a message in black on pink paper, and an inner small piece of white plastic tubing with letter symbol followed by a 4-digit serial number in black. The tag is sealed with a plug at the open end of the exterior tubing.



APPLICATION

Applicator is made of hollow stainless steel needle, with bevelled forward end. Applicator with its enclosed dart tag is inserted diagonally and forward into the fish below the base of the dorsal fin.

- See figure overleaf -

METHOD OF HANDLING

RECOVERY, REPORTING AND RETURN

Publicity
Visual methods

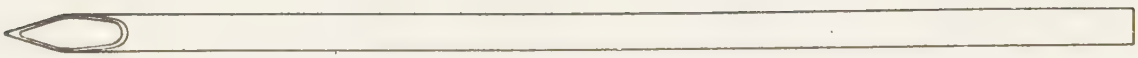
Scale of Reward
Letter of thanks

Reception Office
Mei Prefectural Fishery Experimental Station
Hamajima-cho, Shima-Gun, Mei-ken

Symbols and serial number known to FAO
Letter, serial no. RETURN TO MEI-SUICHI, MIE, JAPAN

MANUFACTURER

Tags provided by Tohoku Regional Fisheries Research Laboratory



FRs

TUNA MARKING PROGRAMMES

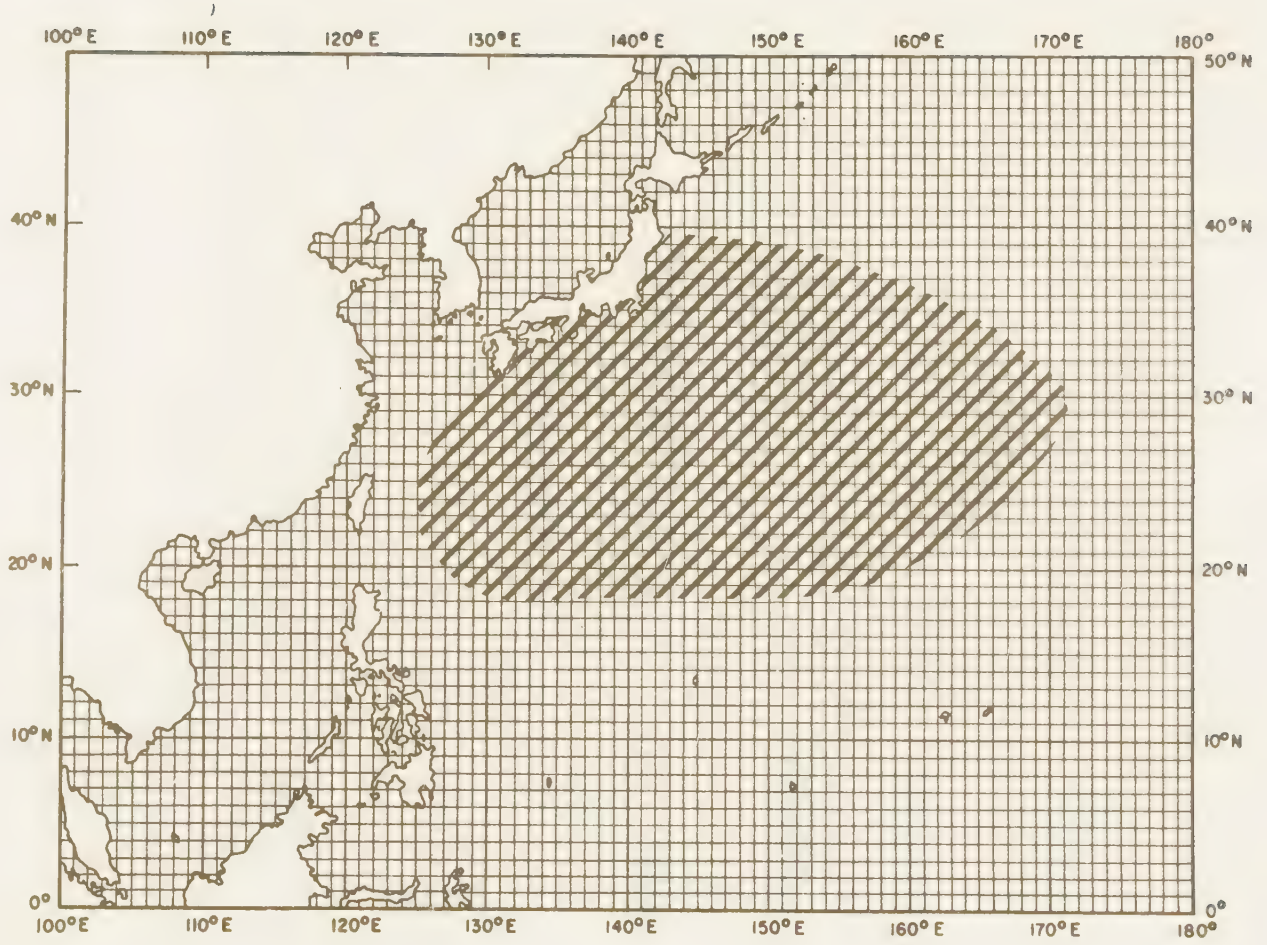
COUNTRY : Japan

45101

TITLE OF INSTITUTION : Mei Prefectural Fishery Experimental Station
Hamajima-cho, Shima-Gun
Mie-ken, Japan

SPECIES MARKED

	Euthynnus pelamis	Thunnus alalunga
TITLE OF PROGRAMME	-	
Current	All the year round	
Projected	-	
Estimated annual cost	-	
Sponsoring body(ies)	-	
Area of Marking	Eastern and southern offshore area of Japan - See figure overleaf -	
SUBJECT MATTER STUDIED	Thunnus alalunga : Estimation of mixing, dispersal and migration Euthynnus pelamis : - do -	



Coverage of present marking program

FRs

TUNA MARKS

45102

COUNTRY : Japan

TITLE OF INSTITUTION : Far Seas Fisheries Research Laboratory
1000, Orido, Shimizu-shi
Shizuoka-ken,

DESCRIPTION

A dart tag, made of 16 cm of yellow plastic tubing with yellow moulded nylon dart-head inserted and glued into one end. It is serially numbered with a letter symbol followed by a four-digit number and legend in black.

APPLICATION

Applicator is made of hollow stainless steel needle, with bevelled forward end. Applicator with its enclosed dart tag is inserted diagonally and forward into the fish below the base of the dorsal fin.

- See figure overleaf -

METHOD OF HANDLING

Fish are held in a V-shaped cradle made of aluminium alloy. The insides of the cradle are covered with sponge rubber which is, in turn, covered by plastic sheeting. Inset in one side of the cradle is a meter stick. A tag magazine, to hold 100 tag needles, and dart tags, is bolted to the cradle.

- See figure overleaf -

RECOVERY, REPORTING AND RETURN

Publicity
Visual methods

Scale of Reward
Gift (fountain pen) and commendation letter

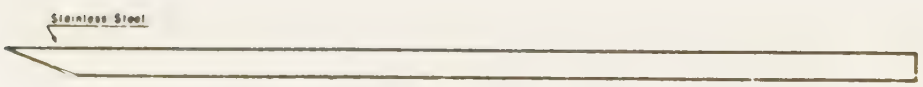
Reception Office
Far Seas Fisheries Research Laboratory
1000, Orido, Shimizu-shi,
Shizuoka-ken

Symbols and serial number known to FAO
Letter, serial no. ENSUI-KEN, JAPAN A

SPECIES MARKED
Thunnus albacares

MANUFACTURER

Takano-seisakujo
22 Nijyudaibashi-dori
Kochi-shi
Japan



NEEDLE

FRs

TUNA MARKING PROGRAMMES

COUNTRY : Japan

45102

TITLE OF INSTITUTION : Far Seas Fisheries Research Laboratory
1000, Orido, Shimizu-shi,
Shizuoka-ken

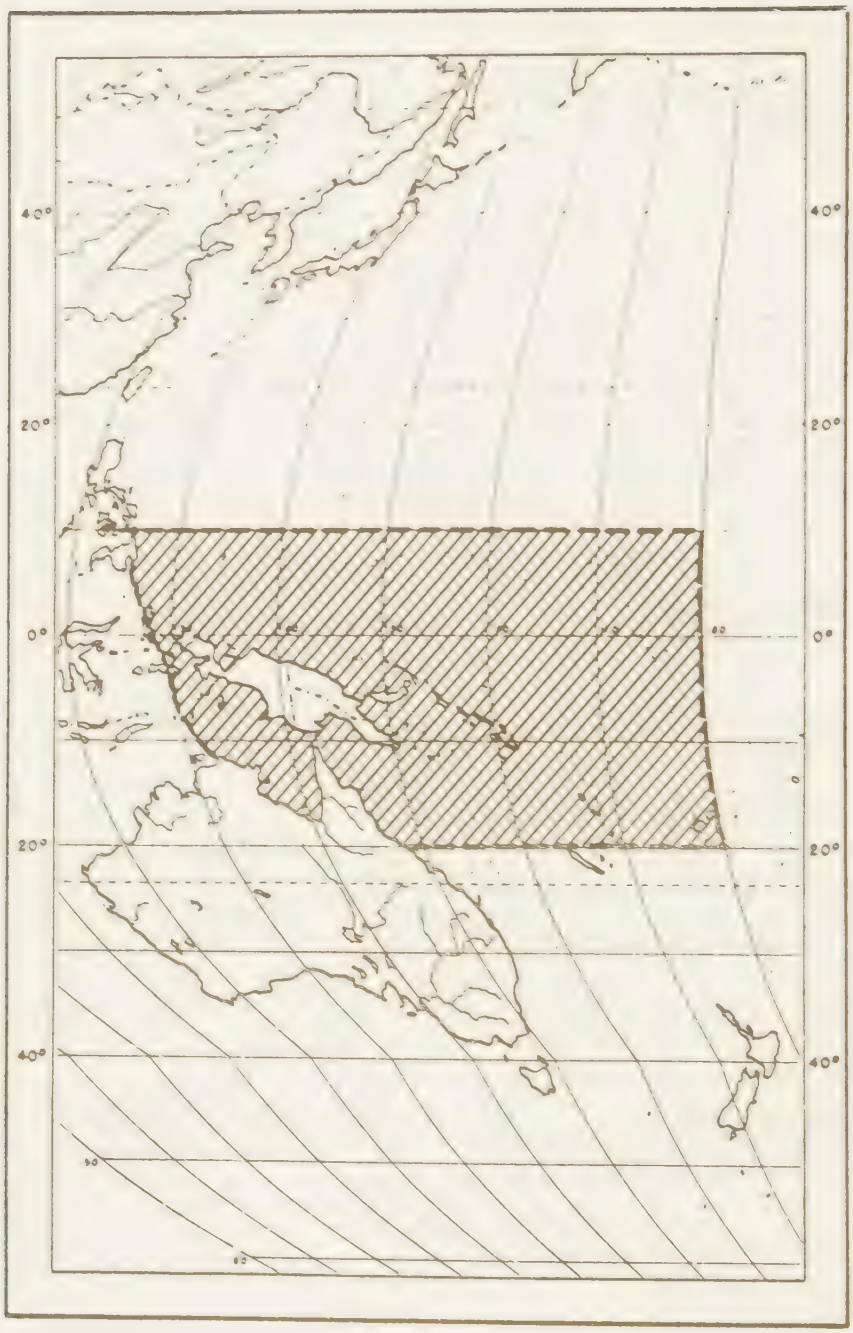
TITLE OF PROGRAMME	Yellow fin Tagging Project in the Western Tropical Pacific
Current	-
Projected	Period not yet decided - expected to start in a few years
Estimated annual cost	$500,000 for first year, and $300,000 for second year and after
Sponsoring body(ies)	Fishery Agency, Japanese Government, in co-operation with foreign governments and international organizations
Area of Marking	10° N-20° S, West of 180°

- See figure overleaf -

SUBJECT MATTER STUDIED

Thunnus albacares : Estimation of mixing, dispersal and migration, and stock identification.
Estimation of population size and mortality rates.
Estimation of growth.

SPECIES MARKED
Thunnus albacares



Coverage of present marking program

FRs

TUNA MARKS

45103

COUNTRY : Japan

TITLE OF INSTITUTION : Fisheries Research Laboratory
Faculty of Oceanography
Tokai University, 1000 Orido Shimizushi

SPECIES MARKED

Thunnus albacares

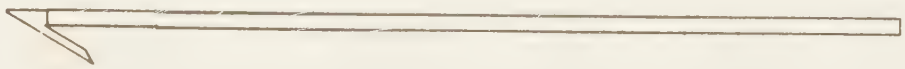
Thunnus obesus

Thunnus alalunga

Euthynnus pelamis

DESCRIPTION

A dart tag, made of 16 cm of yellow plastic tubing with moulded nylon dart-head inserted and glued into one end. It is serially numbered with a letter symbol followed by a four-digit number, marked in black.



APPLICATION

Applicator is made of hollow stainless steel needle, with bevelled forward end. Applicator with its enclosed dart-tag is inserted diagonally and forward into the fish below the base of the dorsal fin.

- See figure overleaf -

METHOD OF HANDLING

Marking is carried out by three persons, one of whom holds fish under his left arm, the second person measures length and the third applies the dart to the fish under the second dorsal fin.

RECOVERY, REPORTING AND RETURN

Publicity

Visual and audio methods

Scale of Reward

-

Reception Office

-

Symbols and serial number known to FAO

MANUFACTURER

Tags provided by Nankai Regional Fisheries Research Laboratory and Tohoku Regional Fisheries Research Laboratory.

FRs

TUNA MARKING PROGRAMMES

COUNTRY : Japan

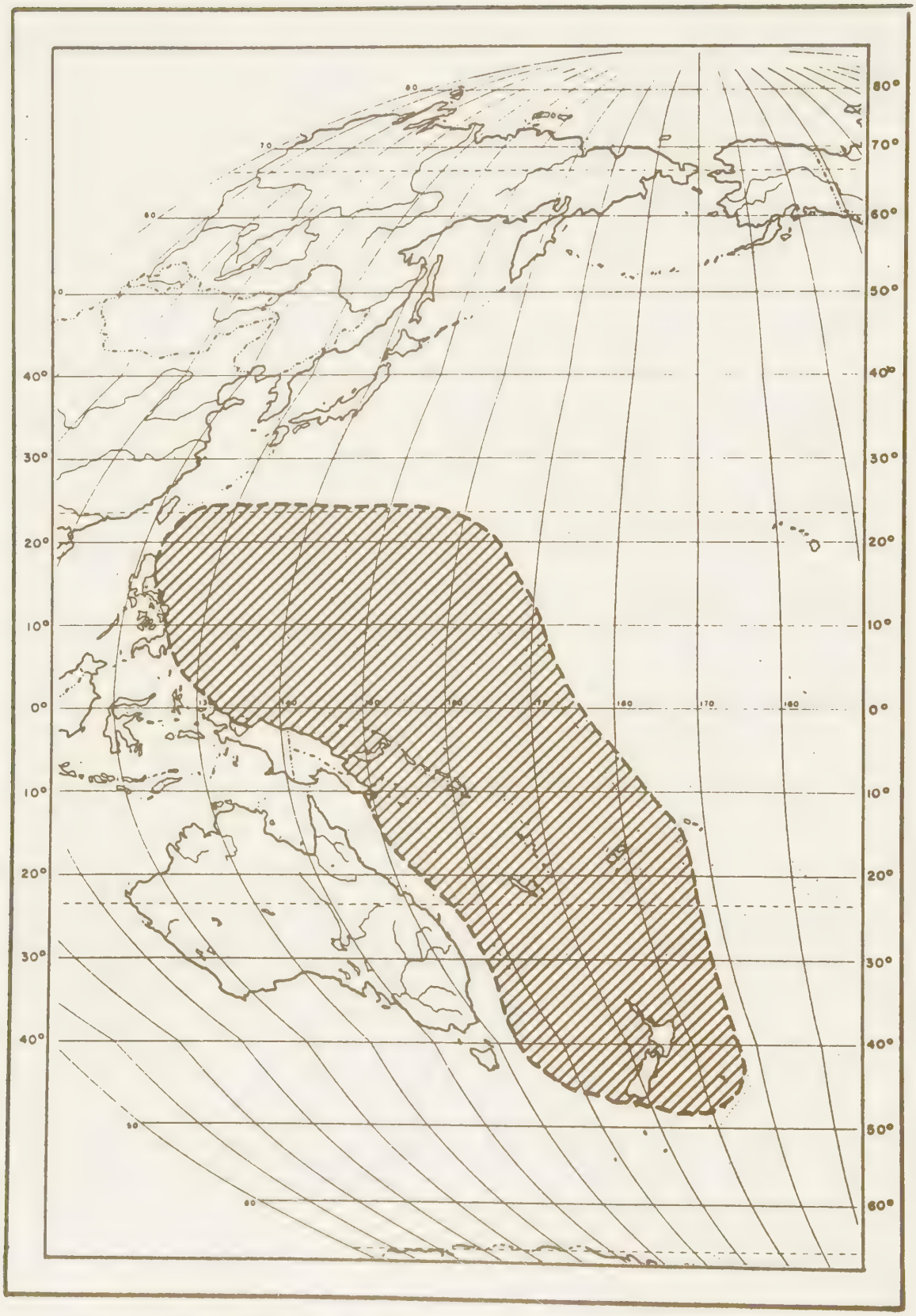
45103

TITLE OF INSTITUTION : Nankai Regional Fisheries Research Laboratory
6-chome, Sanbashi-dori, Kochi-shi, Japan
(Program carried out on behalf of Tokai University)

TITLE OF PROGRAMME	Migration and Oceanographic conditions in the South-western Pacific
Current	From August 1965 to March 1966
Projected	
Estimated annual cost	
Sponsoring body(ies)	
Area of Marking	Southwestern Pacific
	- See figure overleaf -
SUBJECT MATTER STUDIED	Thunnus albacares) : Estimation of mixing, dispersal Thunnus obesus) and migration. Thunnus alalunga.) Estimation of growth. Euthynnus pelamis)

SPECIES MARKED

Thunnus albacares | Thunnus obesus | Thunnus alalunga | Euthynnus pelamis



Coverage of present marking program

FRs

TUNA MARKS

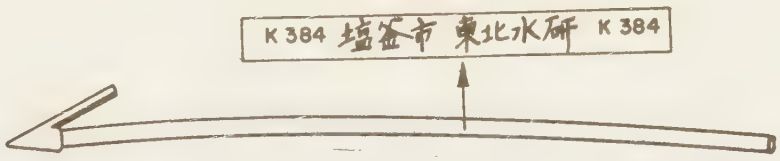
45104

COUNTRY : Japan

TITLE OF INSTITUTION : Tohoku Regional Fisheries Research Laboratory
1-119, Shinhamacho-3, Shiogamashi, Miyagiken,
Japan

DESCRIPTION

A dart tag, made of 11 cm of yellow plastic tubing, with moulded nylon dart-head inserted and glued into one end. It bears a legend in black.



APPLICATION

Applicator is made of hollow stainless steel needle, with bevelled forward end. Applicator with its enclosed dart tag is inserted diagonally and forward into the fish below the base of the second dorsal fin.

- See figure overleaf -

METHOD OF HANDLING

Marking is carried out by three persons, one of whom holds fish under the left arm, the second person measures length and the third applies the dart to the fish under the second dorsal fin.

RECOVERY, REPORTING AND RETURN

Publicity

Visual method

Scale of Reward

Reception Office

Tohoku Regional Fisheries Research Laboratory

Symbols and serial number known to FAO

K 384 塩釜市 東北水研 K 384

MANUFACTURER

SPECIES MARKED

Euthynnus pelamis

FRs

TUNA MARKING PROGRAMMES

45104

COUNTRY : Japan

TITLE OF INSTITUTION : Tohoku Regional Fisheries Research Laboratory
1-119, Shinhamacho-3, Shiogamashi, Miyagiken,
Japan

SPECIES MARKED: Euthynnus pelamis

TITLE OF PROGRAMME	Shipjack tagging project
Current	Since April 1967 to date
Projected	Three years
Estimated annual cost	
Sponsoring body(ies)	Fishery Agency of Japan
Area of Marking	North-west Pacific
SUBJECT MATTER STUDIED	Euthynnus pelamis : Estimation of mixing, dispersal and migration. Estimation of growth.

Coverage of present marking program

FRs

TUNA MARKS

51401

COUNTRY : Norway

TITLE OF INSTITUTION : Directorate of Fisheries
Institute of Marine Research
Nordnesparken 2, Bergen

DESCRIPTION

A Lea hydrostatic tag, consisting of a water-tight tube of plastic, coloured yellow and blue, containing a letter of instructions. It is attached to a nylon dart-head by about 6 cm of monofilament nylon fibre.

APPLICATION

Applicator is made of steel bar mounted in a wooden handle of required length. The forward end of the bar is pointed into a tenon to fit into the mortise of the dart. Applicator is inserted diagonally and forward into the fish below the base of the dorsal fin.

- See figure overleaf -

METHOD OF HANDLING

RECOVERY, REPORTING AND RETURN

Publicity

Visual and audio methods

Scale of Reward

$3.50

Reception Office

Fiskeridirectoratets
Bergen, Norway

Symbols and serial number known to FAO

MANUFACTURER

Norsk Plastic A/S
Fredrikstad, Norway

SPECIES MARKED
Thunnus thynnus

APNES HER

FRs

TUNA MARKS

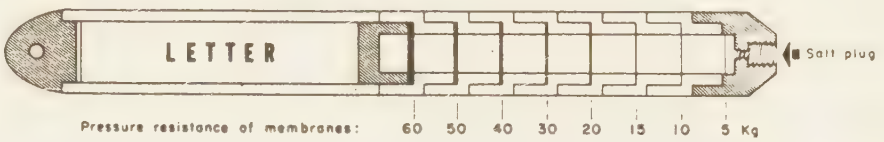
51401

COUNTRY : Norway

TITLE OF INSTITUTION : Directorate of Fisheries
Institute of Marine Research
Nordesparken 2, Bergen

DESCRIPTION

A depth recording mark entitled "Tapeworm tag" is being constructed, consisting of a water-tight segment to contain letter of instructions and eight pressure segments separated by membranes designed to resist pressures of 5 to 60 kg. It is to be attached to the body of the fish as with the Lea type tag.



APPLICATION

Applicator is made of steel bar mounted in a wooden handle of required length. The forward end of the bar is pointed into a tenon to fit into the mortise of the dart. Applicator is inserted diagonally and forward into the fish below the base of the dorsal fin.

- See figure overleaf -

METHOD OF HANDLING

At present the tag is not in use.

RECOVERY, REPORTING AND RETURN

Publicity
Visual and audio methods

Scale of Reward
$3.50

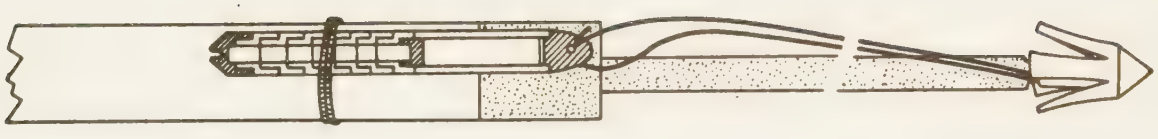
Reception Office
Fiskeridirectoratet
Bergen, Norway

Symbols and serial number known to FAO

MANUFACTURER

Norsk Plastic A/S
Fredrikstad, Norway

SPECIES MARKED
Thunnus thynnus



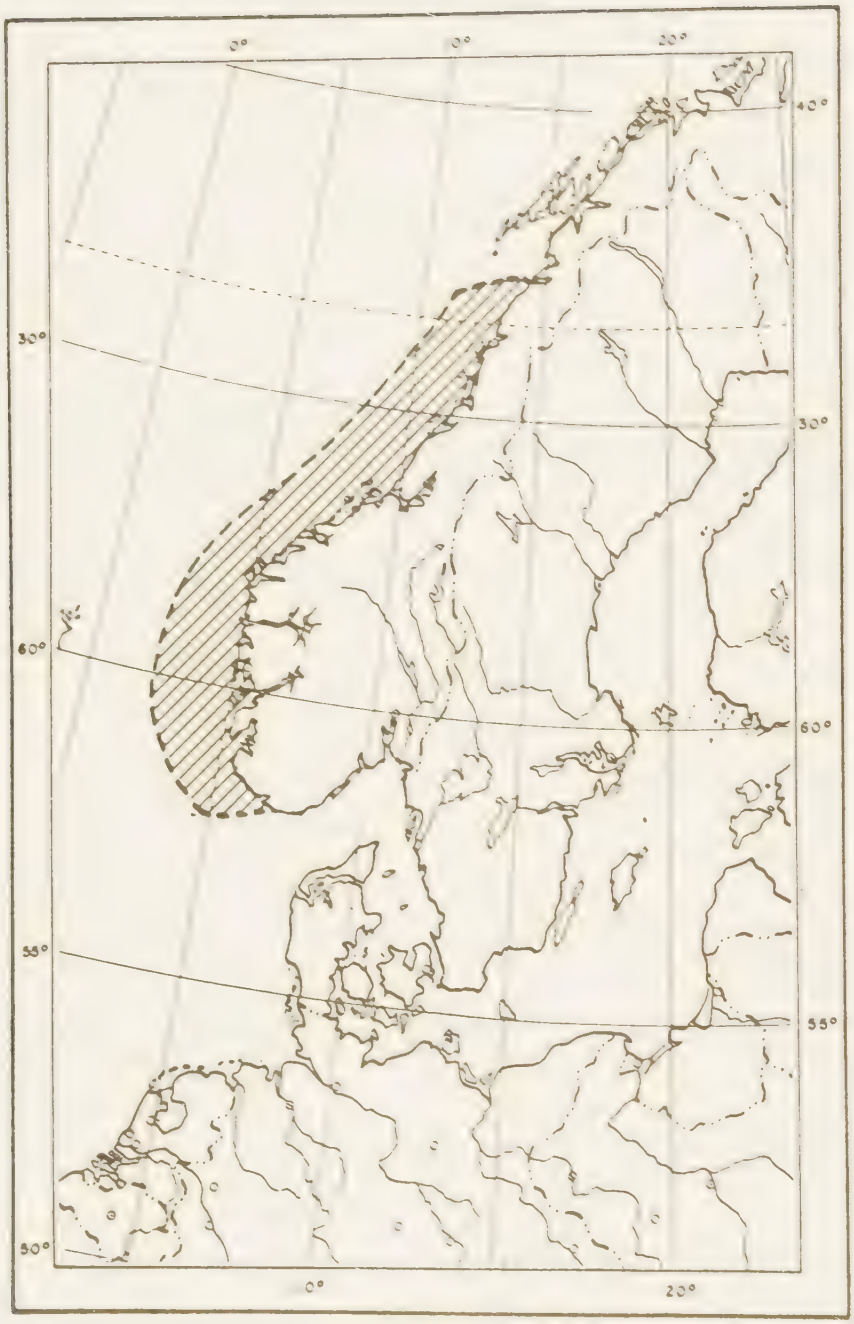
FRs

TUNA MARKING PROGRAMMES

COUNTRY :	Norway	51401
TITLE OF INSTITUTION :	Directorate of Fisheries Institute of Marine Research Nordnesparken 2, Bergen	

TITLE OF PROGRAMME	Tuna tagging
Current	July - September 1957-62
Projected	
Estimated annual cost	$2000,-
Sponsoring body(ies)	Norwegian Institute of Marine Research
Area of Marking	Norwegian coast
	- See figure overleaf -
SUBJECT MATTER STUDIED	Thunnus thynnus : Estimation of mixing, dispersal and migration, and stock identification.

SPECIES MARKED
Thunnus thynnus



Coverage of present marking program

FRs

TUNA MARKS

54101

COUNTRY : Portugal

TITLE OF INSTITUTION : Instituto de Biologia Maritima
Cais do Sodré
Lisboa 2

DESCRIPTION

The mark consists of a yellow alkathene sheet of 15 x 4 cm on which the letter of instructions is printed in black water-proof ink. The alkathene sheet is wrapped onto a blue alkathene spool of 55 mm long which is connected to a nylon dart-head with an 8 cm long monofilament nylon fibre.

APPLICATION

Applicator is made of steel bar mounted in a wooden handle of required length. The forward end of the bar is pointed into a tenon to fit into the mortise of the dart. Applicator is inserted diagonally and forward into the fish below the base of the dorsal fin.

- See figure overleaf -

METHOD OF HANDLING

RECOVERY, REPORTING AND RETURN

Publicity

Audio and visual methods
Direct correspondence/circular letters

Scale of Reward

$2

Reception Office

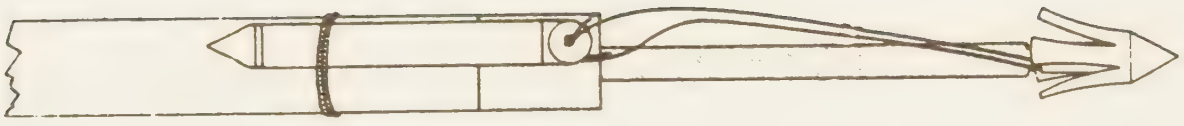
Instituto de Biologia Maritima
Cais do Sodré
Lisboa 2, Portugal

Symbols and serial number known to FAO

MANUFACTURER

(Tags obtained through the Institute of Marine Research, Bergen, Norway)

SPECIES MARKED
Thunnus thynnus
Thunnus obesus



FRs

TUNA MARKING PROGRAMMES

54101

COUNTRY : Portugal

TITLE OF INSTITUTION : Instituto de Biologia Maritima
Cais do Sodré
Lisboa 2

TITLE OF PROGRAMME: Tuna tagging

Current: Autumn

Projected: May to July 1967

Estimated annual cost: Not yet determined

Sponsoring body(ies): Instituto de Biologia Maritima

Area of Marking:

Autumn	Portuguese west coast (near Sesimbra)
May to July 1967	Azores islands

- See figure overleaf -

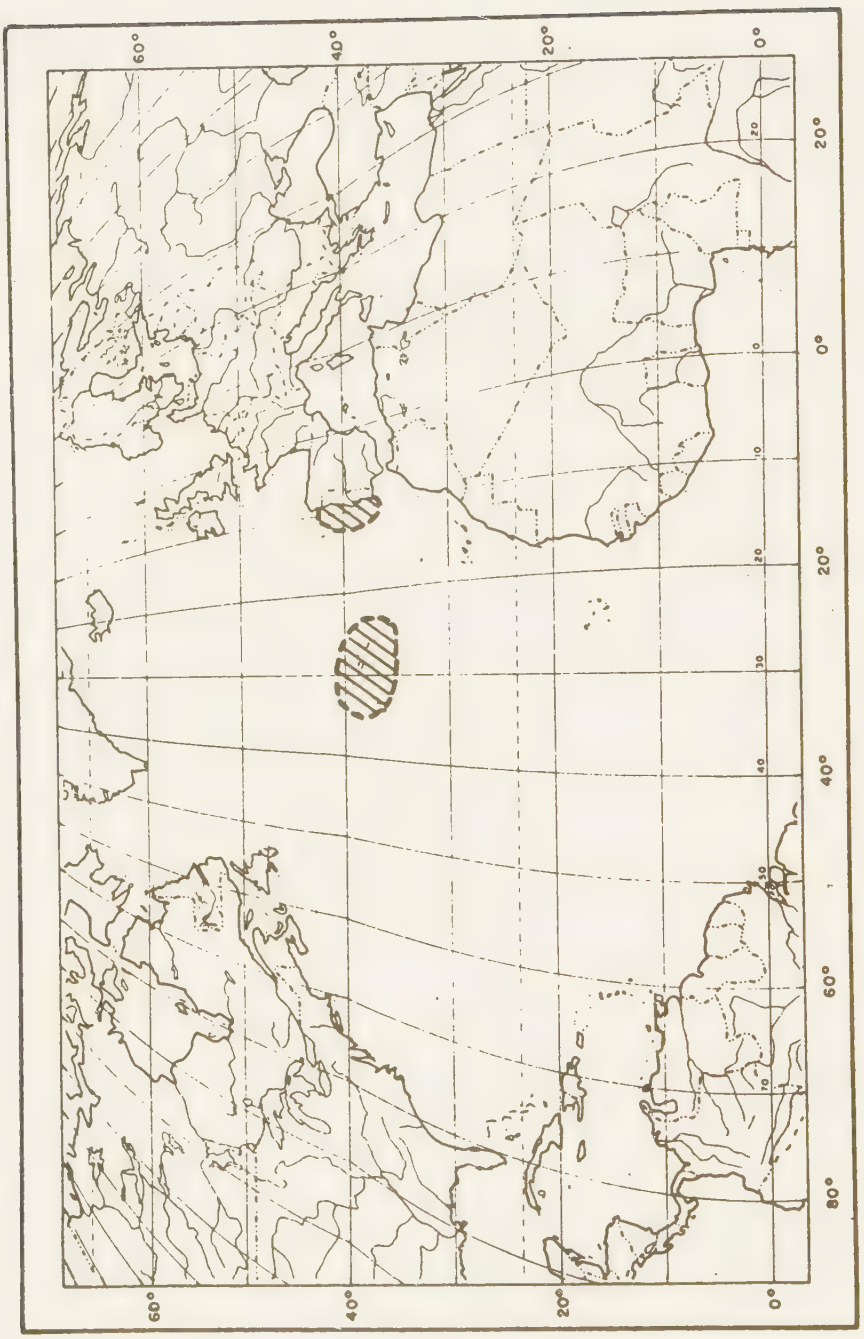
SUBJECT MATTER STUDIED

Thunnus thynnus (Portuguese west coast)	: Estimation of mixing, dispersal and migration, and stock identification. Estimation of population size and mortality rates.
Thunnus obesus (S. Miguel, Azores islands)	: - do -

SPECIES MARKED

Thunnus thynnus

Thunnus obesus



Coverage of present marking program

FRs

TUNA MARKS

54201

COUNTRY : Spain

TITLE OF INSTITUTION : Instituto de Investigaciones Pesqueras
Puerto Pesquero
Cádiz, Spain

DESCRIPTION

A water-tight tube, 8 cm long, of transparent plastic, containing a blue and yellow coloured instruction leaflet. This is joined by a monofilament nylon thread to a stainless steel dart-head. The mark is serially numbered with a letter symbol and a one-digit number in black marked on the instruction leaflet.

APPLICATION

Applicator is made of steel bar mounted in a wooden handle of required length. The forward end of the bar is pointed into a tenon to fit into the mortise of the dart. Applicator is inserted diagonally and forward into the fish below the base of the dorsal fin.

- See figure overleaf -

METHOD OF HANDLING

The tuna is tagged in water.

- See figure overleaf -

RECOVERY, REPORTING AND RETURN

Publicity
Circular letter

Scale of Reward
$4.29 = 300 pesetas

Reception Office
Instituto de Investigaciones Pesqueras
Puerto Pesquero
Cádiz, Spain

Symbols and serial number known to FAO
Letter, serial no.

MANUFACTURER

Instituto de Investigaciones Pesqueras
Puerto Pesquero
Cádiz, Spain

SPECIES MARKED
Thunnus thynnus

FRs

TUNA MARKS

COUNTRY : Spain

54201

TITLE OF INSTITUTION : Instituto de Investigaciones Pesqueras
Puerto Pesquero
Cádiz, Spain

DESCRIPTION

A water-tight tube, 8 cm long, of transparent plastic, containing a blue and yellow coloured instruction leaflet. This is joined by a monofilament nylon thread to a nylon dart-head. The mark is serially numbered with a 2-digit number in black marked on the instruction leaflet.

APPLICATION

Applicator is made of steel bar mounted in a wooden handle of required length. The forward end of the bar is pointed into a tenon to fit into the mortise of the dart. Applicator is inserted diagonally and forward into the fish below the base of the dorsal fin.

- See figure overleaf -

METHOD OF HANDLING

The tuna is tagged in water.

- See figure overleaf -

RECOVERY, REPORTING AND RETURN

Publicity
Circular letter

Scale of Reward
$4.29 = 300 pts.

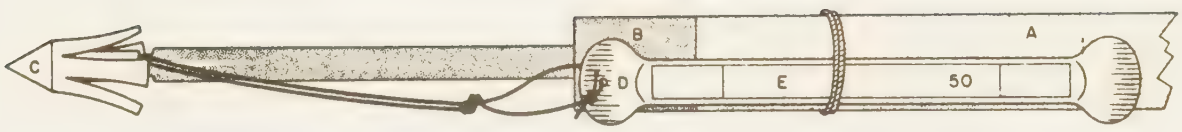
Reception Office
Instituto de Investigaciones Pesqueras
Puerto Pesquero
Cádiz, Spain

Symbols and serial number known to FAO
Serial no.

MANUFACTURER

Instituto de Investigaciones Pesqueras
Puerto Pesquero
Cádiz, Spain

SPECIES MARKED
Thunnus thynnus


C
B
D
E
50
A

FRs

TUNA MARKING PROGRAMMES

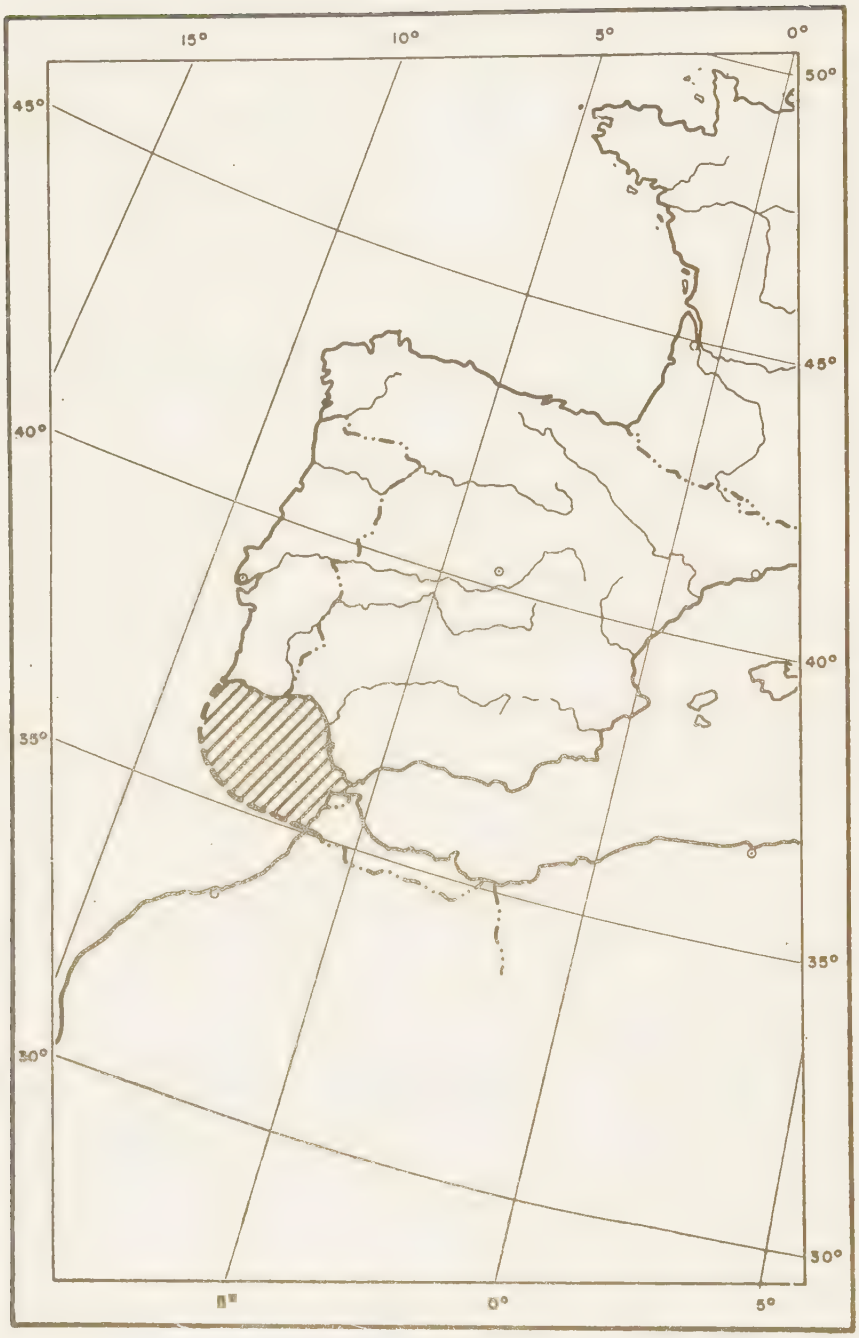
COUNTRY : Spain

54201

TITLE OF INSTITUTION : Instituto de Investigaciones Pesqueras
Puerto Pesquero
Cádiz, Spain

TITLE OF PROGRAMME	Marcación de Atunes
Current	Spring and summer, since 1960
Projected	If possible every year, although not sequent
Estimated annual cost	US$1,500 (approx.)
Sponsoring body(ies)	Instituto de Investigaciones Pesqueras Laboratorio de Cádiz
Area of Marking	Gulf of Cádiz
	- See figure overleaf -
SUBJECT MATTER STUDIED	Thunnus thynnus : Estimation of dispersal and migration. Estimation of population size and mortality rates.

SPECIES MARKED
Thunnus thynnus



Coverage of present marking program

FRs

TUNA MARKS

55601

COUNTRY : Turkey

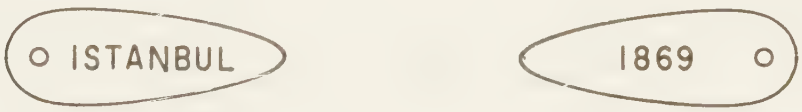
TITLE OF INSTITUTION : Hydrobiological Research Institute, Faculty of Science
University of Istanbul
Istanbul

SPECIES MARKED

Sarda
sarda

DESCRIPTION

An almond-shaped red alkathene plate attached by a spun nylon thread. The tag has a serial number and the city (Istanbul) where the laboratory is situated stamped on it by heat process.



APPLICATION

Attached by darning needle in front of the dorsal fin.

METHOD OF HANDLING

Fish are held by hand and the tag is attached very quickly.

RECOVERY, REPORTING AND RETURN

Publicity
Visual methods

Scale of Reward
US$1

Reception Office
Hydrobiological Research Institute
Rumelihisar, Istanbul

Symbols and serial number known to FAO
Serial no. and city

MANUFACTURER

by the Institute self.

FRs

TUNA MARKING PROGRAMMES

55601

COUNTRY : Turkey

TITLE OF INSTITUTION : Hydrobiological Research Institute
Istanbul
Turkey

SPECIES MARKED

Sarda sarda

TITLE OF PROGRAMME: Fisheries Biological Investigations of the Commercial Important Fishes of Turkish Waters

Current: From 1955 onwards

Projected:

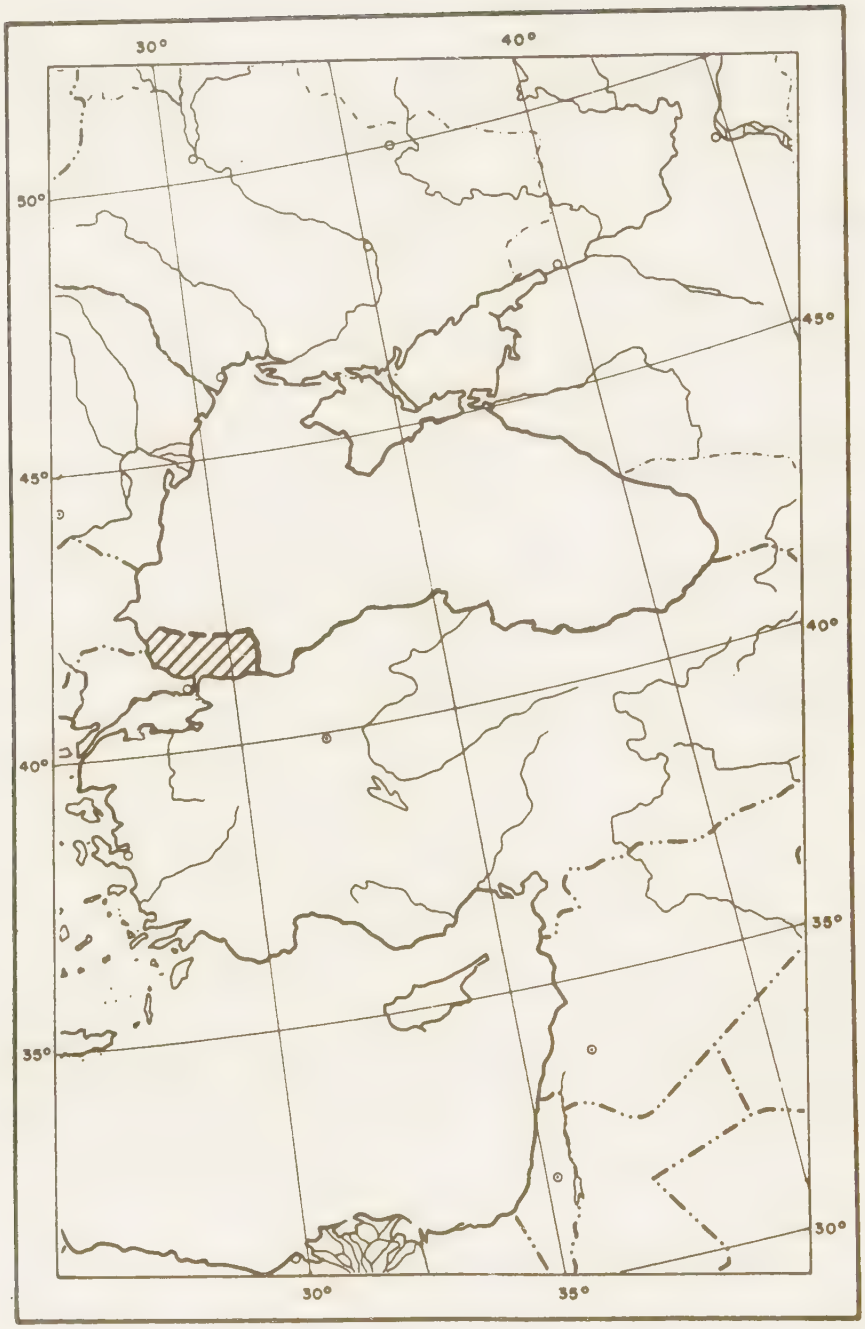
Estimated annual cost: 1,000 US dollars (approx.)

Sponsoring body(ies): Ministry of Commerce

Area of Marking: Black Sea, Bosphorus

- See figure overleaf -

SUBJECT MATTER STUDIED: Sarda sarda : Estimation of mixing, dispersal and migration, and stock identification.
Estimation of population size and mortality rates.



Coverage of present marking program

FRs

TUNA MARKS

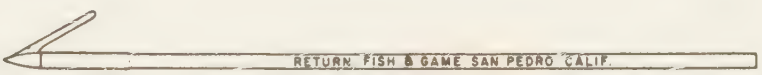
COUNTRY : U.S.A.

23201

TITLE OF INSTITUTION : California Department of Fish and Game, Marine Resources Operations
California State Fisheries Laboratory, 511 Tuna Street
Terminal Island Station, San Pedro, California

DESCRIPTION

A dart tag, made of 12 cm of yellow plastic tubing, with moulded nylon dart-head inserted and glued into one end. It bears a legend in black.



APPLICATION

Applicator is made of stainless steel tubing: ID 0.118, OD 0.148; 6" in length. Applicator with its enclosed dart tag is inserted diagonally and forward into the fish below the base of the dorsal fin.

- See figure overleaf -

METHOD OF HANDLING

Plastic foam pads - firm: 2" x 24" x 45". Base line for snout and 10 cm intervals marked by alternating colours, 5 cm intervals also indicated.

RECOVERY, REPORTING AND RETURN

Publicity

Visual methods
Direct correspondence/circular letters

Scale of Reward

$1.00 (& letter)

Reception Office

Any Department of Fish and Game office throughout the State for transmittal to the California State Fisheries Laboratory, San Pedro, California.

Symbols and serial number known to FAO

RETURN FISH & GAME SAN PEDRO CALIF.

MANUFACTURER

California Department of Fish and Game

SPECIES MARKED
Thunnus thynnus

FRs

TUNA MARKING PROGRAMMES

COUNTRY : U.S.A.

23201

TITLE OF INSTITUTION : California Department of Fish and Game -
Marine Resource Operations
California State Fisheries Laboratory, 511 Tuna Street
Terminal Island Station, San Pedro, California

TITLE OF PROGRAMME	Bluefin tuna tag release and recapture
Current	Initiated in 1962; a few released incidentally prior to 1962.
Projected	Indefinitely
Estimated annual cost	$4000 to $35000
Sponsoring body(ies)	California Department of Fish and Game, and U.S. Bureau of Commercial Fisheries
Area of Marking	Temperate Eastern Pacific Ocean - off southern California and Baja California

- See figure overleaf -

SUBJECT MATTER STUDIED

Thunnus thynnus : Estimation of mixing, dispersal and migration.
Estimation of population size and mortality rates.
Estimation of growth.

SPECIES MARKED
Thunnus thynnus

Coverage of present marking program

FRs

TUNA MARKS

23201

COUNTRY : U.S.A.

TITLE OF INSTITUTION : California Department of Fish and Game -
Marine Resources Operations
California State Fisheries Laboratory, 511 Tuna Street
Terminal Island Station, San Pedro, California

DESCRIPTION

A dart tag, made of $10\frac{1}{2}$ cm of yellow plastic tubing, with moulded nylon dart-head inserted and glued into one end. It is serially numbered with a letter symbol and five-digit number in black, followed by the legend.

APPLICATION

Applicator is made of stainless steel tubing: ID 0.135, OD 0.165; 6" in length. Applicator with its enclosed dart tag is inserted diagonally and forward into the fish below the base of the dorsal fin.

- See figure overleaf -

METHOD OF HANDLING

Plastic foam pads - firm: 2" x 24" x 45". Base line for snout and 10 cm intervals marked by alternating colours, 5 cm intervals also indicated.

Thunnus alalunga

RECOVERY, REPORTING AND RETURN

Publicity

Visual methods
Direct correspondence/circular letters

Scale of Reward

$1.00 (& letter and commendation card)

Reception Office

Any Department of Fish and Game office throughout the State for transmittal to the California State Fisheries Laboratory, San Pedro, California.

Symbol and serial number known to FAO

Serial no. RETURN CAL. F & G SAN PEDRO

MANUFACTURER

Floy Tag and Mfg. Co. Inc.
2909 N.E. Blakeley Street
Seattle, Washington 98105

SPECIES MARKED

FRs

TUNA MARKING PROGRAMMES

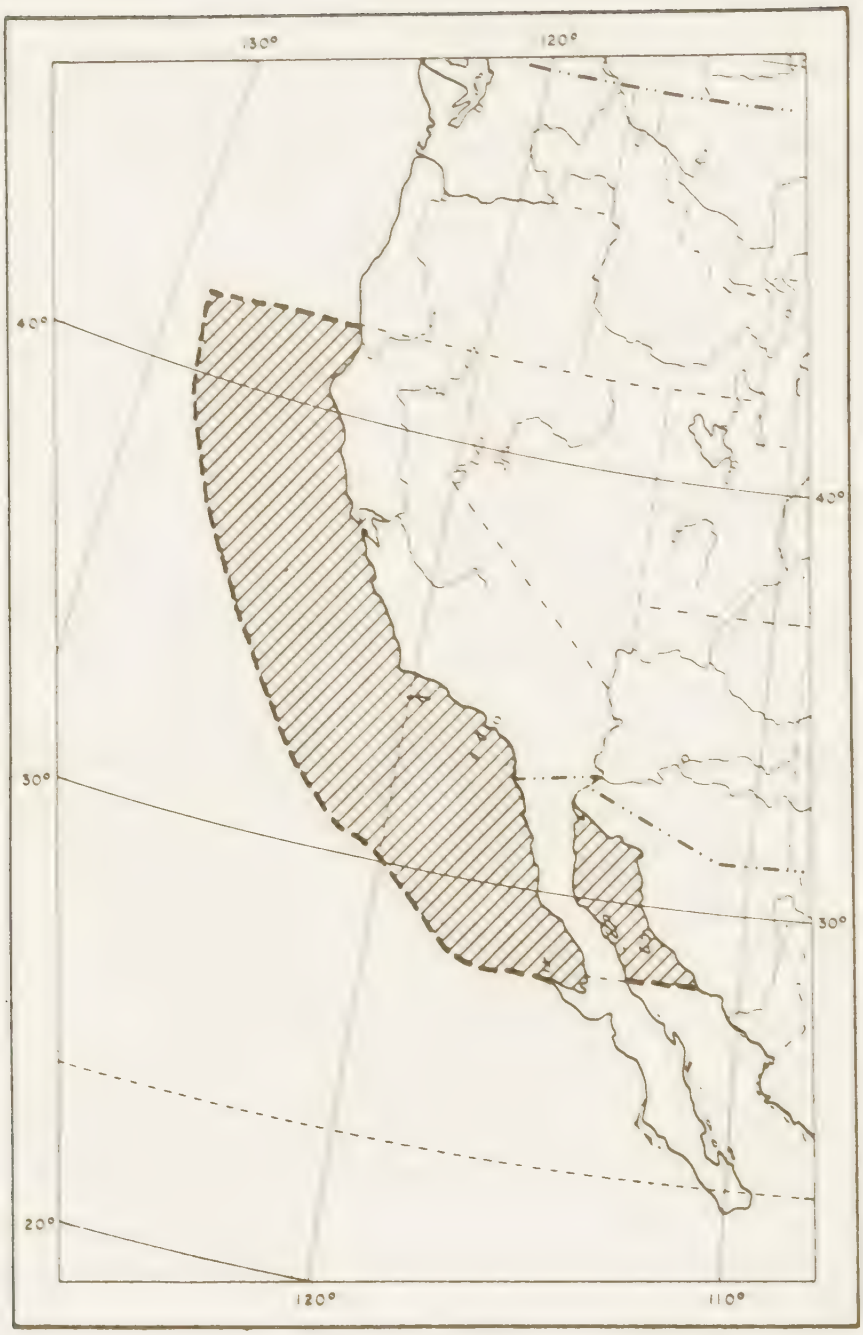
23201

COUNTRY : U.S.A.

TITLE OF INSTITUTION : California Department of Fish and Game -
Marine Resource Operations
California State Fisheries Laboratory, 511 Tuna Street
Terminal Island Station, San Pedro, California

SPECIES MARKED: Thunnus alalunga

TITLE OF PROGRAMME	Albacore tag release and recapture
Current	Since 1952
Projected	Indefinite
Estimated annual cost	$2000 to $5000
Sponsoring body(ies)	California Department of Fish and Game
Area of Marking	Temperate Eastern Pacific Ocean off California and northern Baja California
	- See figure overleaf -
SUBJECT MATTER STUDIED	Thunnus alalunga : Estimation of mixing, dispersal and migration. Estimation of population size and mortality rates. Estimation of growth.



Coverage of present marking program

FRs

TUNA MARKS

23202

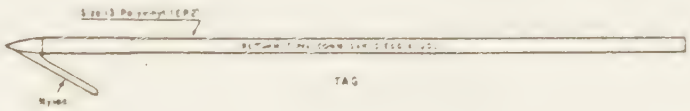
COUNTRY : U.S.A.

TITLE OF INSTITUTION : Inter-American Tropical Tuna Commission
c/o Scripps Institution of Oceanography
La Jolla, California

SPECIES MARKED
Thunnus albacares
Euthynnus pelamis

DESCRIPTION

A dart tag made of a length of plastic tubing with moulded nylon dart-head inserted and glued into one end. The plastic tubing bears a legend.



APPLICATION

Applicator is made of hollow stainless steel needle with bevelled forward end. Applicator with its enclosed dart tag is inserted diagonally and forward into the fish below the base of the dorsal fin.

- See figure overleaf -

METHOD OF HANDLING

Fish are held in a V-shaped cradle made of aluminium alloy. The insides of the cradle are covered with foam rubber which is, in turn, covered by plastic sheeting. Inset in one side of the cradle is a meter stick. A tag magazine, to hold 100 tag needles, and dart tags, is bolted to the cradle.

- See figure overleaf -

RECOVERY, REPORTING AND RETURN

Publicity

Visual and audio methods

Scale of Reward

$1.00 for each tag (and one drawing each year for a single $300 prize)

Reception Office

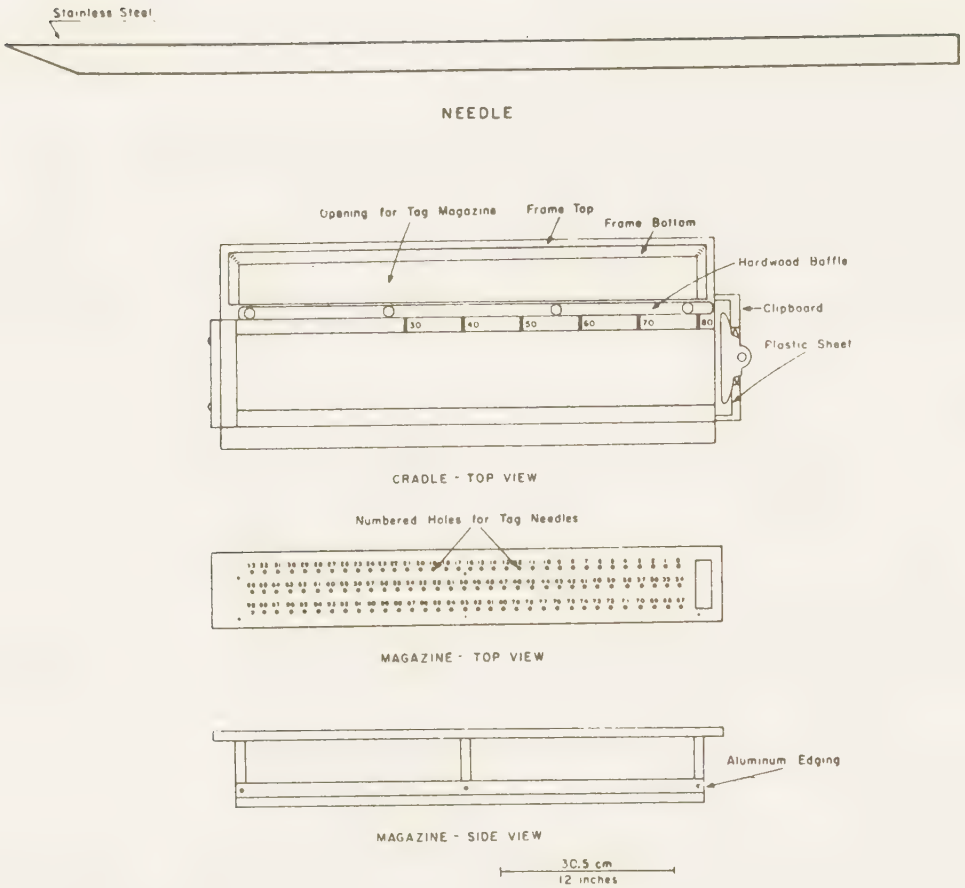
Inter-American Tropical Tuna Commission
c/o Scripps Institution of Oceanography
La Jolla, California

Symbols and serial number known to FAO

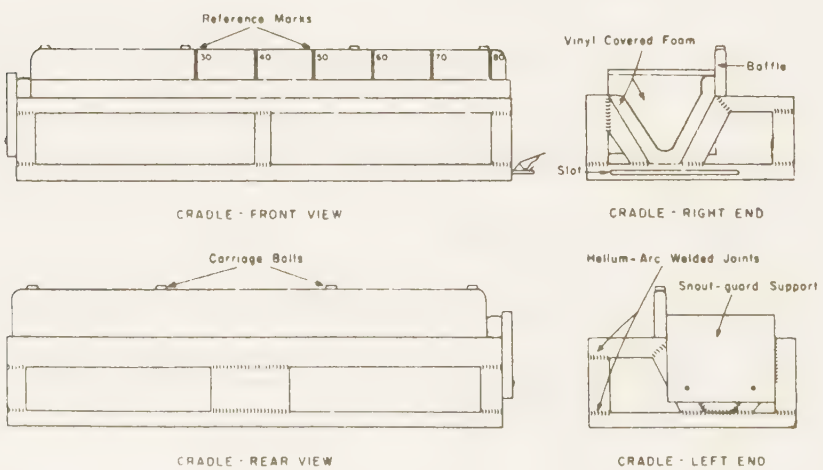
RETURN TUNA COMM SAN DIEGO

MANUFACTURER

Tags are made by the Commission (but almost identical tags are sold by Floy Tag and Mfg. Co., Seattle, Washington).



Views of the Cradle and Tag magazine used by the I-ATTC. (Fink, 1965)



Views of the cradle used by the I-ATTC (Fink, 1965)

FRs

TUNA MARKING PROGRAMMES

23202

COUNTRY : U.S.A.

TITLE OF INSTITUTION : Inter-American Tropical Tuna Commission
c/o Scripps Institution of Oceanography
La Jolla, California

SPECIES MARKED: Thunnus albacares; Euthynnus pelamis

TITLE OF PROGRAMME: Tuna Tagging Investigations

Current: 1955 (Dec.) to date

Projected: - at least through June 1968

Estimated annual cost: Range, 1955-65: $10,000 - $110,000

Sponsoring body(ies): Inter-American Tropical Tuna Commission

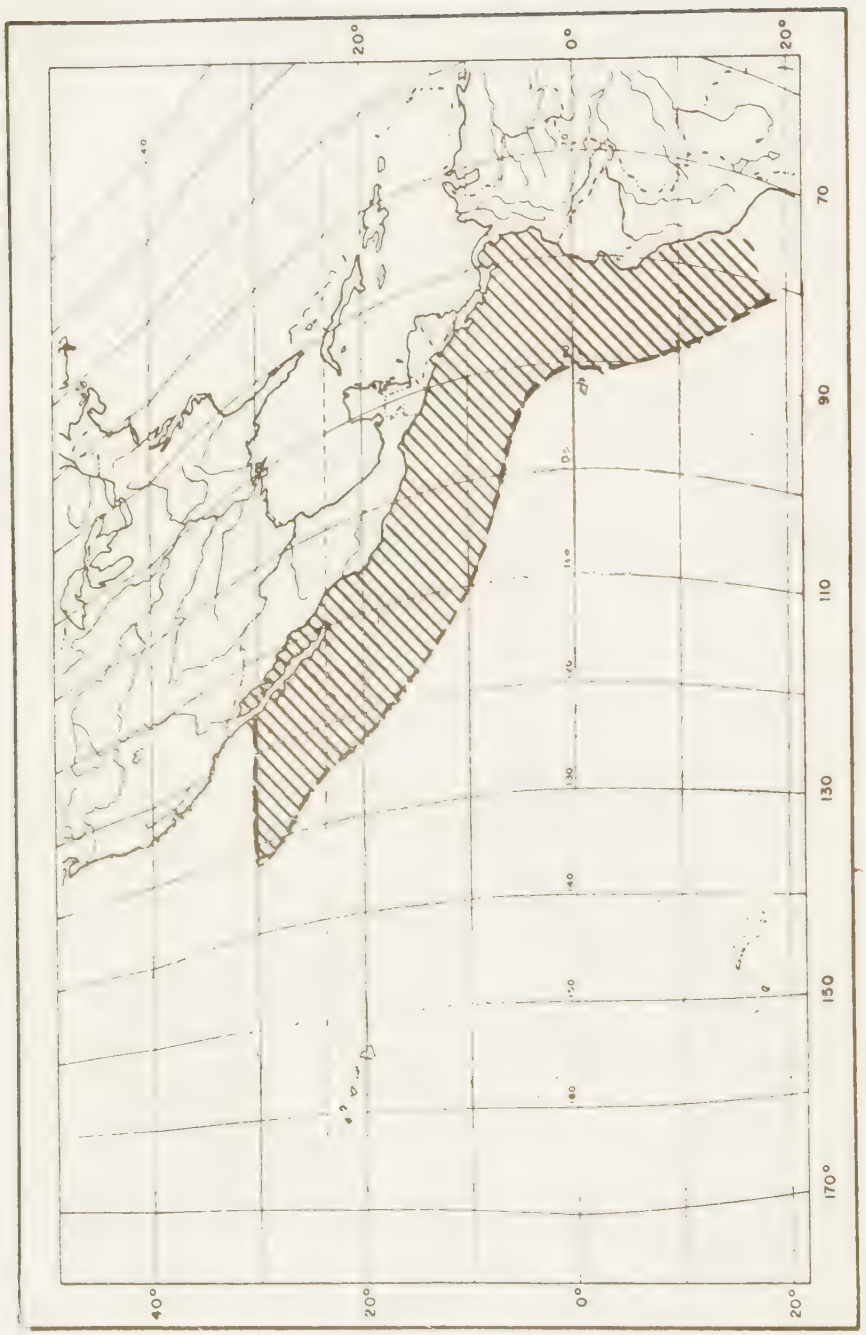
Area of Marking: Eastern Pacific

- See figure overleaf -

SUBJECT MATTER STUDIED:

Thunnus albacares : Estimation of mixing, dispersal and migration, and stock identification.
Estimation of mortality rates.
Estimation of growth.

Euthynnus pelamis : - do -



Coverage of present marking program

FRs

TUNA MARKS

COUNTRY : U.S.A.

23101

TITLE OF INSTITUTION : State of Oregon Fish Commission
307 State Office Building, 1400 S.W. Fifth Avenue
Portland, Oregon 97201

DESCRIPTION

A dart tag, made of 14½ cm of orange plastic tubing, with moulded nylon dart-head inserted and glued into one end. It is serially numbered with a letter symbol and a 4-digit number in black, following the legend.

APPLICATION

Tag is applied with a hypodermic needle of proper diameter of stainless steel. Applicator with its enclosed dart tag is inserted diagonally and forward into the fish below the base of the dorsal fin.

- See figure overleaf -

METHOD OF HANDLING

Fish are held in a V-shaped trough made of plywood. The insides of the trough are lined with sponge rubber. The rubber is covered with plastic sheeting. Inset in one side of the trough is a meter stick.

- See figure overleaf -

SPECIES MARKED

Thunnus alalunga

RECOVERY, REPORTING AND RETURN

Publicity
Visual methods

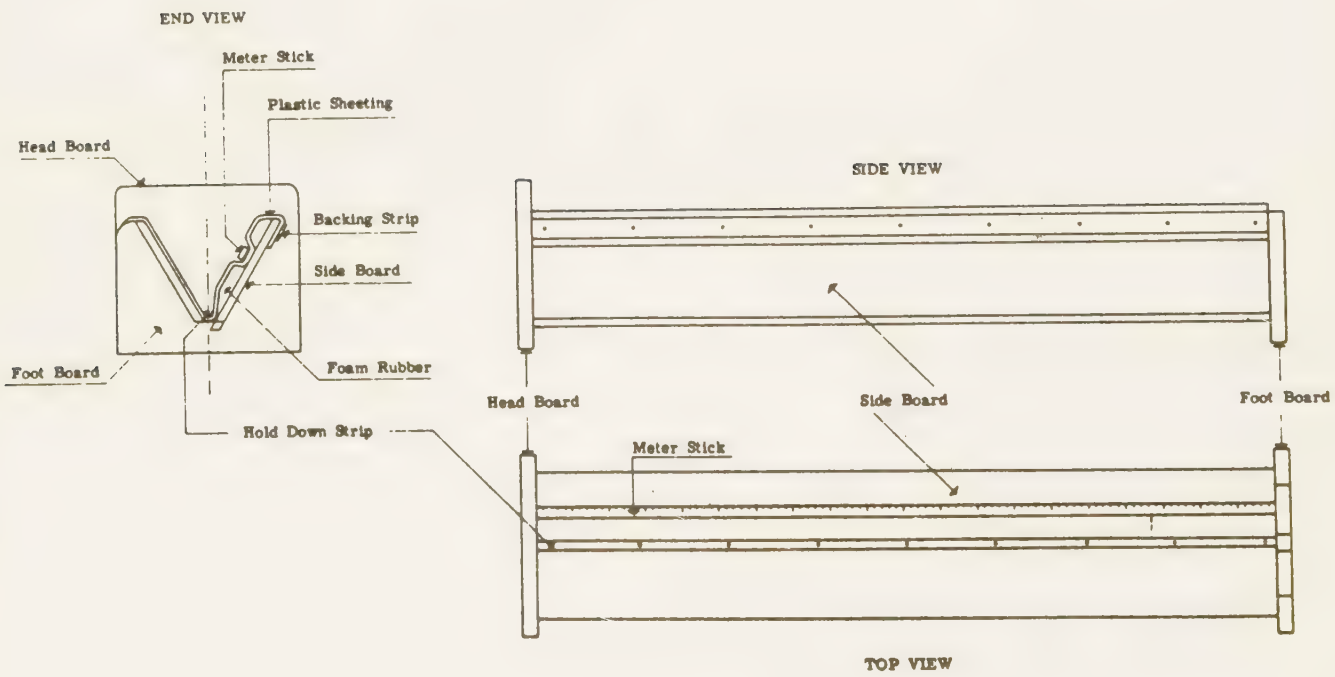
Scale of Reward
$1.00 per tag

Reception Office
State of Oregon Fish Commission
859 Olney Avenue
Astoria, Oregon 97103

Symbols and serial number known to FAO
REWARD RETURN OREGON FISH COMM. ASTORIA, Letter, serial no.

MANUFACTURER

Floy Tag and Mfg. Inc.
2909 Blakeley Street
Seattle, Washington 98105


END VIEW
Meter Stick
Plastic Sheeting
Head Board
Backing Strip
Side Board
Foot Board
Foam Rubber
Hold Down Strip
SIDE VIEW
Head Board
Side Board
Foot Board
Meter Stick
TOP VIEW

FRs

TUNA MARKING PROGRAMMES

COUNTRY : U.S.A.

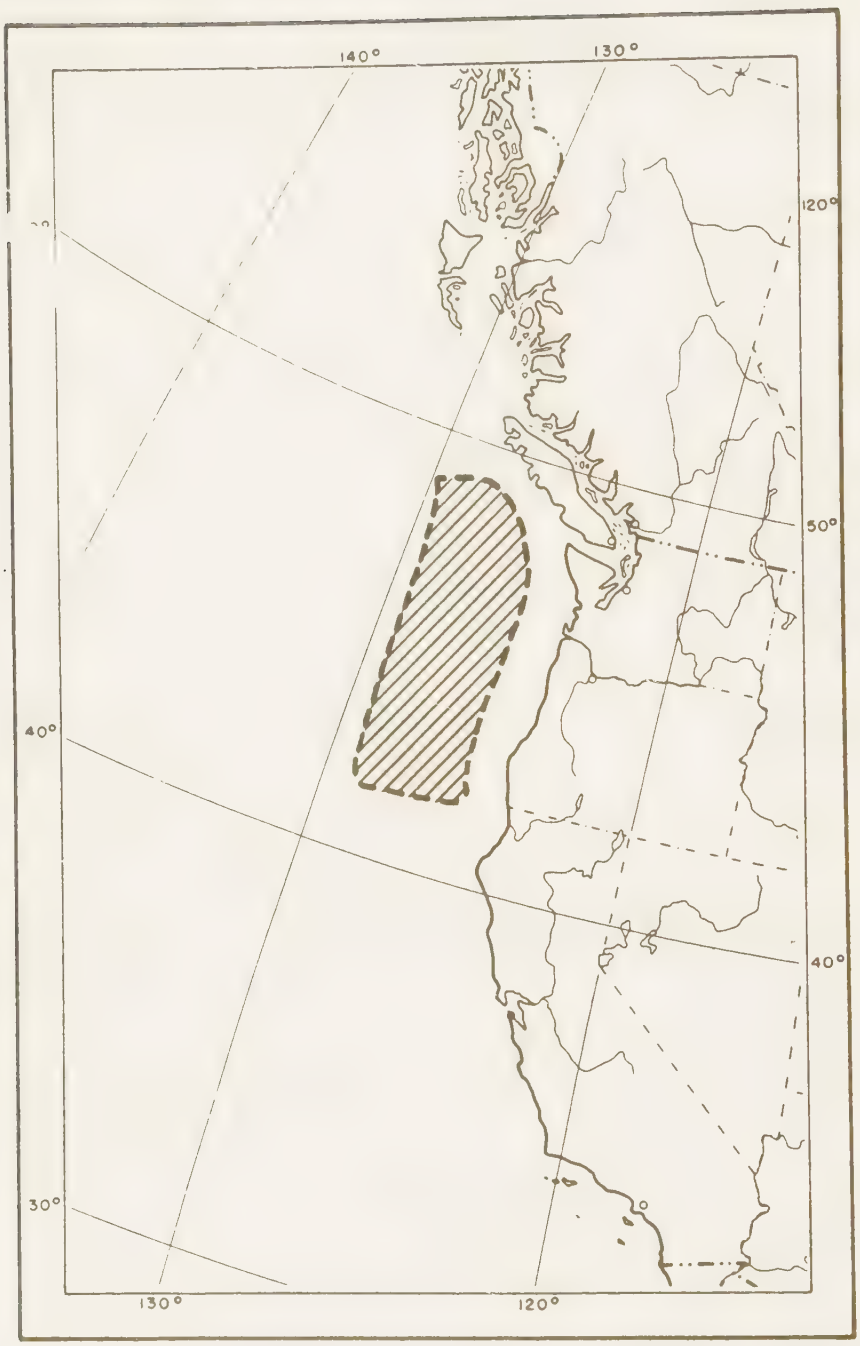
23101

TITLE OF INSTITUTION : State of Oregon Fish Commission
307 State Office Building, 1400 S.W. Fifth Avenue
Portland, Oregon

SPECIES MARKED

Thunnus alalunga

TITLE OF PROGRAMME	Pre-season Albacore Exploratory Cruise
Current	
Projected	July 1966
Estimated annual cost	$2,500.00
Sponsoring body(ies)	State of Oregon Fish Commission
Area of Marking	40 to 120 miles off the Oregon coast
	- See figure overleaf -
SUBJECT MATTER STUDIED	Thunnus alalunga : Estimation of mixing, dispersal and migration. Estimation of growth.



Coverage of present marking program

FRs

TUNA MARKS

COUNTRY : U.S.A.

23601

TITLE OF INSTITUTION : Woods Hole Oceanographic Institution
Woods Hole
Massachusetts 02543

SPECIES MARKED
Thunnus thynnus
Thunnus albacares
Thunnus obesus
Thunnus alalunga
Thunnus atlanticus
Euthynnus pelamis
Sarda sarda
Euthynnus alleteratus

DESCRIPTION

A dart tag, made of 12 cm of yellow plastic tubing with moulded nylon dart-head inserted and glued into one end. It is serially numbered with a letter symbol followed by a five-digit number and legend in black.

APPLICATION

Applicator is made of tubular stainless steel injector, mounted on wooden handle of suitable length. The handle itself is hollow at the point where injector is connected, in order to accomodate the remaining part of the tag after it is inserted in the injector.

- See figure overleaf -

METHOD OF HANDLING

Fish are marked in water alongside vessel or removed from water briefly with a regular landing net.

RECOVERY, REPORTING AND RETURN

Publicity

Visual, audio, audiovisual methods
Direct correspondence or circular letters

Scale of Reward

US$5.00 - Letter of thanks

Reception Office

1) Woods Hole Oceanographic Institution, Woods Hole, Mass., U.S.A.
2) Office of Statistical Services, Bureau of Commercial Fisheries
3) Fisheries Res. Board of Canada, St. Andrews, New Brunswick, Canada

Symbols and serial number known to FAO

Letter and serial no. OCEAN INST. WOODS HOLE MASS USA

MANUFACTURER

Floy Tag and Manufacturing, Inc.
2909 N.E. Blakeley Street
Seattle
Washington 98105 U.S.A.

FRs

TUNA MARKS

23601

COUNTRY : U.S.A.

TITLE OF INSTITUTION : Woods Hole Oceanographic Institution
Woods Hole
Massachusetts 02543

SPECIES MARKED

Thunnus thynnus
Thunnus albacares
Thunnus obesus
Thunnus alalunga
Thunnus atlanticus
Euthynnus pelamis
Sarda sarda
Euthynnus alleteratus

DESCRIPTION

The capsule tag is a moulded nylon tube of about $3\frac{1}{2}$ cm connected to a stainless steel dart-head with a 12 cm long monofilament nylon fibre. The capsule contains a letter of instructions and is sealed with a red or yellow screw-in plug.

APPLICATION

Applicator is made of slotted stainless steel bar projecting about 5 cm from a wooden handle in which it is mounted. The length of the handle is determined by operating conditions.

- See figure overleaf -

METHOD OF HANDLING

Fish are marked in water alongside vessel or removed from water briefly with a regular landing net.

RECOVERY, REPORTING AND RETURN

Publicity

Visual, audio and audiovisual methods
Direct correspondence or circular letters

Scale of Reward

US$5.00 - Letter of thanks

Reception Office

1) Woods Hole Oceanographic Institution, Woods Hole, Mass. 02543, U.S.A.
2) Office of Statistical Services, Bureau of Commercial Fisheries
3) Fish. Res. Board of Canada, St. Andrews, New Brunswick, Canada

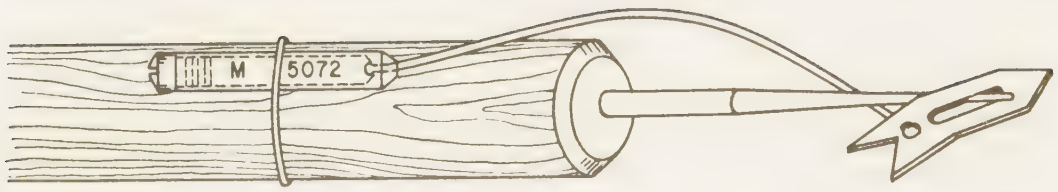
Symbols and serial number known to FAO

Letter and serial no.

MANUFACTURER

F.C. Phillips, Inc.
Stoughton
Mass. 02072 U.S.A.

Floy Tag and Manufacturing, Inc.
2909 N.E. Blakeley Street
Seattle, Washington 98105, U.S.A.


M
5072

FRs

TUNA MARKS

23601

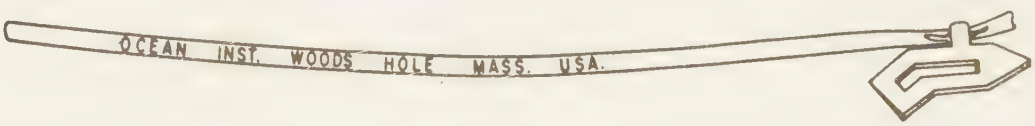
COUNTRY : U.S.A.

TITLE OF INSTITUTION : Woods Hole Oceanographic Institution
Woods Hole
Massachusetts 02543

SPECIES MARKED
Thunnus thynnus
Thunnus albacares
Thunnus obesus
Thunnus alalunga
Thunnus atlanticus
Euthynnus pelamis
Sarda sarda
Euthynnus alleteratus

DESCRIPTION

A dart tag, made of about 13 cm of yellow plastic tubing, with stainless steel dart-head clamped onto one end. It is serially numbered with a single letter code and 5 digit number and legend, printed in black.



APPLICATION

Applicator is made of slotted stainless steel bar projecting about 5 cm from a wooden handle in which it is mounted. The length of the handle is determined by operating conditions.

- See figure overleaf -

METHOD OF HANDLING

Fish are marked in water alongside vessel or removed from water briefly with a regular landing net.

RECOVERY, REPORTING AND RETURN

Publicity

Visual, audio, and audiovisual methods.
Direct correspondence or circular letters

Scale of Reward

US$5.00 - Letter of thanks

Reception Office

1) Woods Hole Oceanographic Institution, Woods Hole, Mass. 02543, U.S.A.
2) Office of Statistical Services, Bureau of Commercial Fisheries
3) Fisheries Res. Board of Canada, St. Andrews, New Brunswick, Canada

Symbols and serial number known to FAO

Letter and serial no. OCEAN INST WOODS HOLE MASS USA

MANUFACTURER

F.C. Phillips, Inc.
Stoughton
Mass. 02072 U.S.A.
(darts)

Insul-Tab Co., Inc.
160 Cross Street
Winchester, Mass. U.S.A.
(streamers)

Floy Tag and Manufacturing Inc
2909 N.E. Blakeley Street
Seattle, Wash. 98105 U.S.A.
(streamers)

FRs

TUNA MARKS

23601

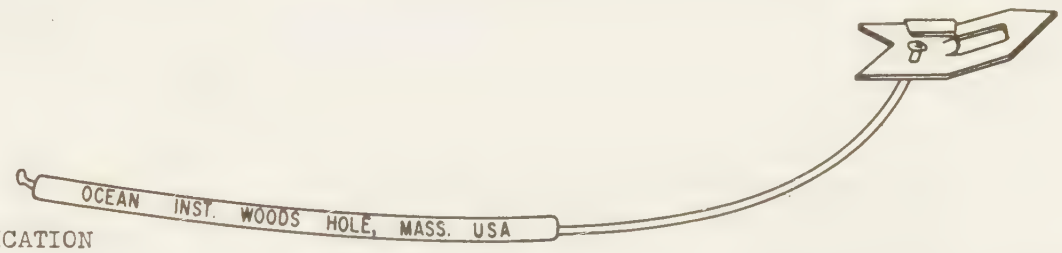
COUNTRY : U.S.A.

TITLE OF INSTITUTION : Woods Hole Oceanographic Institution
Woods Hole
Massachusetts 02543

SPECIES MARKED
Thunnus thynnus
Thunnus albacares
Thunnus obesus
Thunnus alalunga
Thunnus atlanticus
Euthynnus pelamis
Sarda sarda
Euthynnus alleteratus

DESCRIPTION

Stainless steel dart tag made of 8-9 cm yellow plastic tubing connected to a stainless steel dart-head with a 15 cm long monofilament nylon fibre. It is serially numbered with a two-letter symbol followed by a 5-digit number on one side and the address of the originating institute on the other printed in black.



APPLICATION

Applicator is made of slotted stainless steel bar projecting about 5 cm from a wooden handle in which it is mounted. The length of the handle is determined by operating conditions.

- See figure overleaf -

METHOD OF HANDLING

Fish are marked in water alongside vessel or removed from water briefly with a regular landing net.

RECOVERY, REPORTING AND RETURN

Publicity

Visual, audio and audiovisual methods
Direct correspondence or circular

Scale of Reward

US$5.00 - Letter of thanks

Reception Office

1) Woods Hole Oceanographic Institution, Woods Hole, Mass. 02543, U.S.A.
2) Office of Statistical Services, Bur. of Commercial Fish., Dept. of Interior
3) Fisheries Res. Board of Canada, St. Andrews, New Brunswick, Canada

Symbols and serial number known to FAO

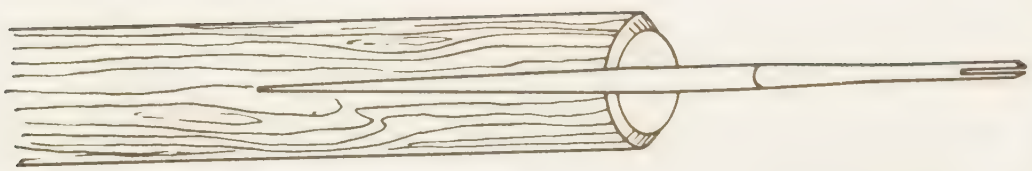
Letter, serial no. OCEAN INST. WOODS HOLE. MASS. USA

MANUFACTURER

Floy Tag and Manufacturing, Inc.
2909 N.E. Blakeley Street
Seattle, Washington 98105
U.S.A.

F.C. Phillips, Inc.
Stoughton
Massachusetts 02072
U.S.A.

(darts)



FRs

TUNA MARKS

23601

COUNTRY : U.S.A.

TITLE OF INSTITUTION : Woods Hole Oceanographic Institution
Woods Hole
Massachusetts 02543

SPECIES MARKED
Thunnus thynnus
Thunnus albacares
Thunnus obesus
Thunnus alalunga
Thunnus atlanticus
Euthynnus pelamis
Sarda sarda
Euthynnus alleteratus

DESCRIPTION

Stainless steel dart tag made of 8-9 cm yellow plastic tubing connected to a stainless steel dart-head with a 15 cm long monofilament nylon fibre. It is serially numbered with a two-letter symbol followed by a 5-digit number on one side and the address of the originating institute on the other printed in black.

APPLICATION

Applicator is made of slotted stainless steel bar projecting about 5 cm from a wooden handle in which it is mounted. The length of the handle is determined by operating conditions.

- See figure overleaf -

METHOD OF HANDLING

Fish are marked in water alongside vessel or removed from water briefly with a regular landing net.

RECOVERY, REPORTING AND RETURN

Publicity

Visual, audio and audiovisual methods
Direct correspondence or circular

Scale of Reward

US$5.00 - Letter of thanks

Reception Office

1) Woods Hole Oceanographic Institution, Woods Hole, Mass. 02543, U.S.A.
2) Office of Statistical Services, Bureau of Commercial Fish., Dept. of Interior
3) Fisheries Res. Board of Canada, St. Andrews, New Brunswick, Canada

Symbols and serial number known to FAO

Letter, serial no. OCEAN INST. WOODS HOLE. MASS. USA

MANUFACTURER

Floy Tag and Manufacturing, Inc.
2909 N.E. Blakeley Street
Seattle, Washington 98105
U.S.A.

F.C. Phillips, Inc.
Stoughton
Massachusetts 02072
U.S.A.

(darts)

FRs

TUNA MARKS

23601

COUNTRY : U.S.A.

TITLE OF INSTITUTION : Woods Hole Oceanographic Institution
Woods Hole
Massachusetts 02543

SPECIES MARKED
Thunnus thynnus — Thunnus albacares — Thunnus obesus — Thunnus alalunga — Thunnus atlanticus — Euthynnus pelamis — Sarda sarda — Euthynnus alletteratus

DESCRIPTION

Dart tag made of 8 cm yellow plastic tubing connected to a nylon head with a nylon fibre of about 11 cm moulded as one piece. The end of the connecting fibre is heat flattened to stop plastic tubing from slipping out. The tag is serially numbered with a letter symbol followed by a 5-digit number and legend in black.

APPLICATION

The tag is applied by FLOY FDM-68 Tagging gun. The tags fit gun in groups of 25, consecutively numbered.

- See figure overleaf -

METHOD OF HANDLING

Fish are lifted into boat by line or leader or landing net for tagging. A cradle is sometimes used to hold fish.

RECOVERY, REPORTING AND RETURN

Publicity

Visual, audio and audiovisual methods
Direct correspondence or circular letters

Scale of Reward

US$5.00 - Letter of thanks

Reception Office

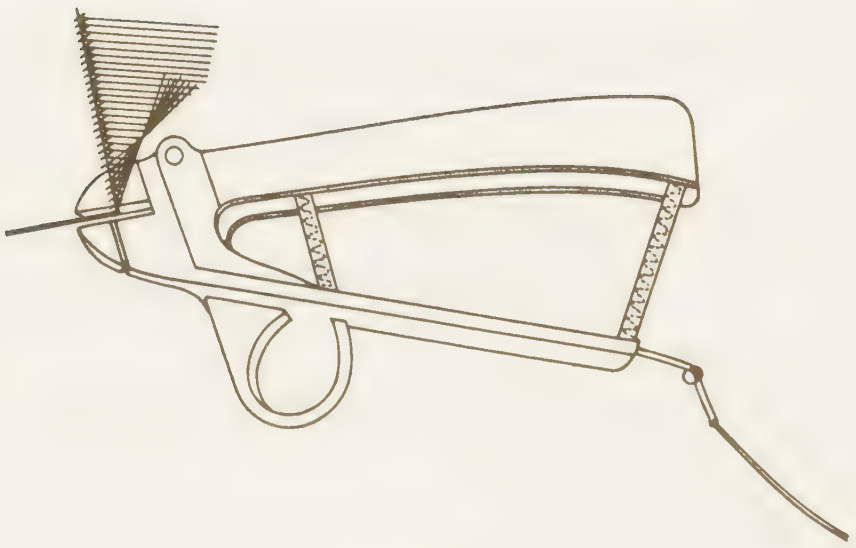
1) Woods Hole Oceanographic Institution, Woods Hole, Mass. 02543 U.S.A.
2) Office of Statistical Services, Bur. of Commercial Fish., Dept. of Interior
3) Fisheries Res. Board of Canada, St. Andrews, New Brunswick, Canada

Symbols and serial number known to FAO

Letter, serial no. OCEAN INST. WOODS HOLE MASS USA

MANUFACTURER

Floy Tag and Manufacturing, Inc.
2909 N.E. Blakeley Street
Seattle, Washington 98105
U.S.A.



FRs

TUNA MARKS

23601

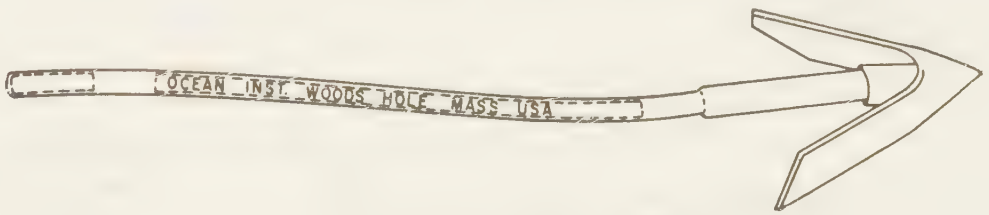
COUNTRY : U.S.A.

TITLE OF INSTITUTION : Woods Hole Oceanographic Institution
Woods Hole
Massachusetts 02543

SPECIES MARKED
Thunnus thynnus
Thunnus albacares
Thunnus obesus
Thunnus alalunga
Thunnus atlanticus
Euthynnus pelamis
Sarda sarda
Euthynnus alleteratus

DESCRIPTION

Streamer tag, made of about 13 cm transparent polythene tubing, with moulded nylon arrow-head inserted and glued at one end. The transparent tubing contains about 8 cm long yellow plastic tubing with the serial number with a single letter symbol followed by a 5-digit number and the legend printed in black. The tag is sealed by heat process at the open end of the exterior tubing.



APPLICATION

Applicator is made of tubular stainless steel injector, mounted on wooden handle of suitable length. The handle itself is hollow at the point where injector is connected, in order to accomodate the remaining part of the tag after it is inserted in the injector.

- See figure overleaf -

METHOD OF HANDLING

Fish are marked in water alongside vessel or removed from water briefly with a regular landing net.

RECOVERY, REPORTING AND RETURN

Publicity

Visual, audio and audiovisual methods
Direct correspondence or circular letters

Scale of Reward

US$5.00 - Letter of thanks

Reception Office

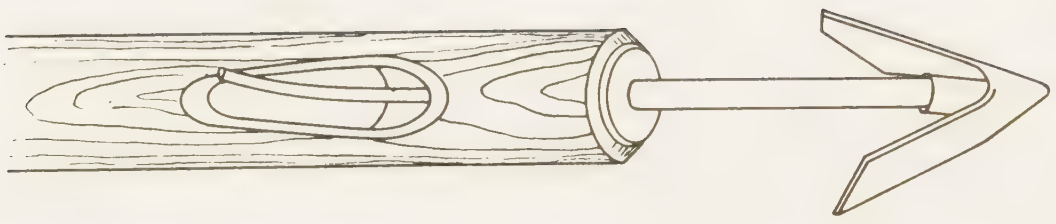
1) Woods Hole Oceanographic Institution, Woods Hole, Mass. 02543 U.S.A.
2) Office of Statistical Services, Bur. of Commerical Fisheries, Dept. of Interior
3) Fisheries Res. Board of Canada, St. Andrews, New Brunswick, Canada

Symbols and serial number known to FAO

Letter and serial no. OCEAN INST. WOODS HOLE MASS USA

MANUFACTURER

Floy Tag and Manufacturing, Inc.
2909 N.E. Blakeley Street
Seattle, Washington 98105
U.S.A.



FRs

TUNA MARKS

23601

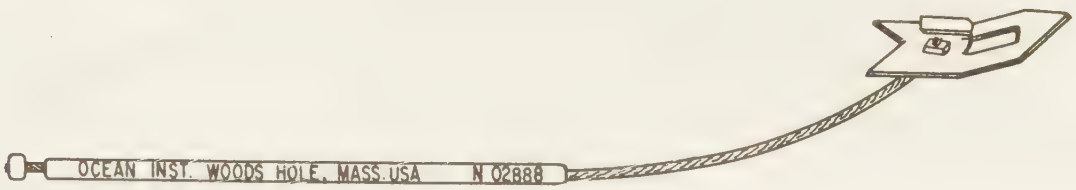
COUNTRY : U.S.A.

TITLE OF INSTITUTION : Woods Hole Oceanographic Institution
Woods Hole
Massachusetts 02543

SPECIES MARKED
Thunnus thynnus
Thunnus albacares
Thunnus obesus
Thunnus alalunga
Thunnus atlanticus
Euthynnus pelamis
Sarda sarda
Euthynnus alleteratus

DESCRIPTION

Stainless steel dart tag made of 8-9 cm yellow plastic tubing connected to a stainless steel dart-head by a 5-6 cm long plastic covered flexible steel cable. It is serially numbered with a single letter symbol followed by a 5-digit number and bears the address of the originating institute printed in black.



APPLICATION

Applicator is made of slotted stainless steel bar projecting about 2" from a wooden handle in which it is mounted. The length of the handle is determined by operating conditions.

- See figure overleaf -

METHOD OF HANDLING

Fish are marked in water alongside vessel, or removed from water briefly with a regular landing net. A cradle is sometimes used to hold fish which are tagged on board.

RECOVERY, REPORTING AND RETURN

Publicity

Visual, audio and audiovisual methods
Direct correspondence or circular letters

Scale of Reward

US$5.00 - Letters

Reception Office

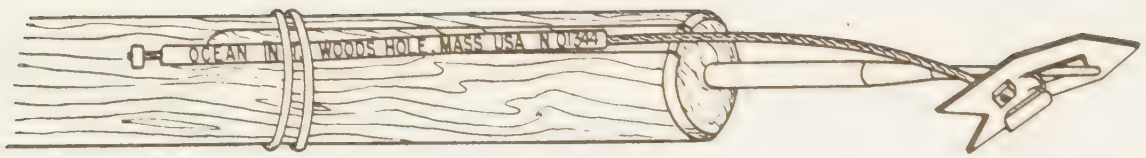
Woods Hole Oceanographic Institution, Woods Hole, Mass. 02543, U.S.A.

Symbols and serial number known to FAO

Letter, serial no. REWARD OCEAN INST. WOODS HOLE. MASS. USA

MANUFACTURER

Floy Tag and Manufacturing, Inc.
2909 N.E. Blakeley Street
Seattle, Washington 98105
U.S.A.


OCEAN IN
WOODS HOLE, MASS USA N°01

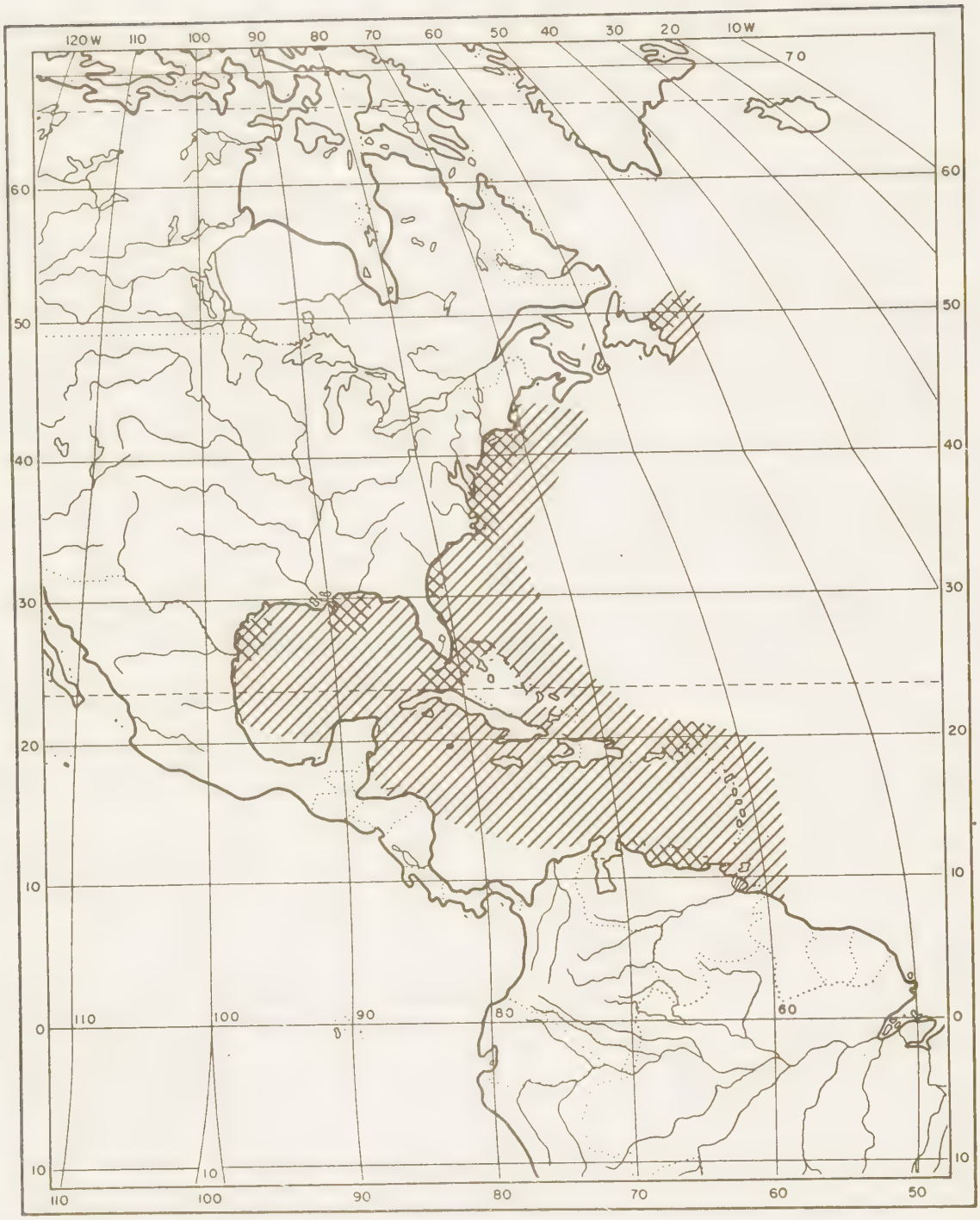
FRs

TUNA MARKING PROGRAMMES

COUNTRY : U.S.A. 23601

TITLE OF INSTITUTION : Woods Hole Oceanographic Institution
Woods Hole
Massachusetts 02543

SPECIES MARKED	Thunnus thynnus	Thunnus albacares	Thunnus obesus	Thunnus alalunga	Thunnus atlanticus	Euthynnus pelamis	Sarda sarda	Euthynnus alleteratus
TITLE OF PROGRAMME	Cooperative Game Fish Tagging Program							
Current	1954 to date							
Projected	Indefinite							
Estimated annual cost	$50,000							
Sponsoring body(ies)	National Bureau of Commercial Fisheries National Science Foundation Sport Fishing Institute Private: Individual sport fishermen and sport fishing organizations							
Area of Marking	- See figure overleaf -							
SUBJECT MATTER STUDIED	Thunnus thynnus : Estimation of mixing, dispersal, migration, and stock identification. Secondarily estimation of population size, mortality rates and growth.							
	Euthynnus pelamis : - do -							
	Thunnus albacares : Estimation of mixing, dispersal, migration and stock identification.							
	Thunnus obesus : - do -							
	Thunnus alalunga : - do -							
	Thunnus atlanticus : - do -							
	Sarda sarda : - do -							
	Euthynnus alleteratus : - do -							



Coverage of present marking program; general tagging area indicated by cross-hatch and intensive tagging areas by double-hatch.

FRs

TUNA MARKS

66001

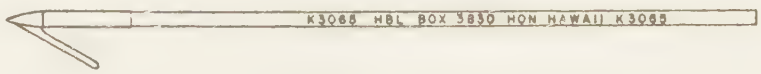
COUNTRY : U.S.A.

TITLE OF INSTITUTION : U.S. Bureau of Commercial Fisheries
Biological Laboratory
P.O. Box 3830
Honolulu, Hawaii 96812

SPECIES MARKED
Thunnus albacares
Thunnus obesus
Thunnus alalunga
Euthynnus pelamis

DESCRIPTION

A dart tag made of 12 cm of yellow plastic tubing, with moulded nylon dart-head inserted and glued into one end. It is serially numbered with a letter symbol and 4-digit number, followed by a legend printed in black.



APPLICATION

The tag is inserted with a stainless steel needle made of No. 3 tempered stainless steel 5/32 inch outside diameter and 0.016 inch wall. The point is cut as shown in the figure so the tag head will be held securely. (Without this feature the tip slips out of the groove, the head turns across the axis of the needle, and the streamer is cut off when the needle is inserted into the fish.) The needle should be of sufficient length so that the end of the streamer does not protrude.

- See figure overleaf -

METHOD OF HANDLING

In tagging skipjack, the fish is hooked on pole and line, swung up, caught under the arm, and unhooked. The tagger, standing 1 to 2 feet behind the fisherman, inserts the tag-bearing needle on the right side of the fish, at a point one-half to one inch below the crest of the back and between the end of the second dorsal fin and the insertion of the first dorsal finlet. The tagged fish are not measured. In tagging albacore, yellowfin, and big-eye tunas, the fish is brought up on deck, measured, tagged and released as quickly as possible.

RECOVERY, REPORTING AND RETURN

Publicity
Visual methods
Direct correspondence/circular letters

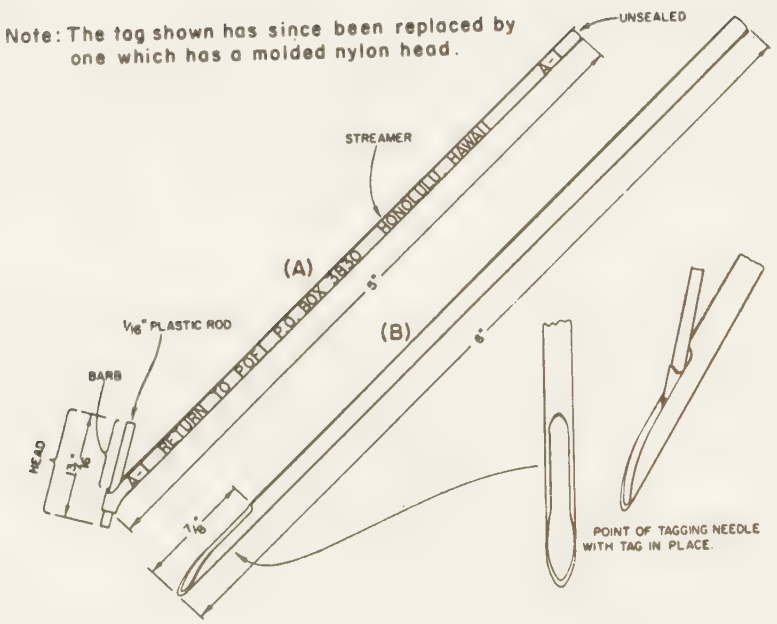
Scale of Reward
Commendation letter, giving purpose of tagging program, area and time of release of the tagged tuna, and some preliminary results of the tagging program.

Reception Office
U.S. Bureau of Commercial Fisheries Biological Laboratory
P.O. Box 3830; Honolulu, Hawaii 96812

Symbols and serial number known to FAO
Letter, serial no. HBL BOX 3830 HON HAWAII

MANUFACTURER

Floy Tag and Manufacturing, Inc.
2909 N.E. Blakeley St., Seattle, Wash. 98105 U.S.A.


Note: The tag shown has since been replaced by one which has a molded nylon head.
UNSEALED
STREAMER
HONOLULU HAWAII
(A)
5"
(B)
6"
1/16" PLASTIC ROD
BARB
HEAD
3/16"
1/16"
RETURN TO POF. P.O. BOX 3830
POINT OF TAGGING NEEDLE WITH TAG IN PLACE.

FRs

TUNA MARKING PROGRAMMES

66001

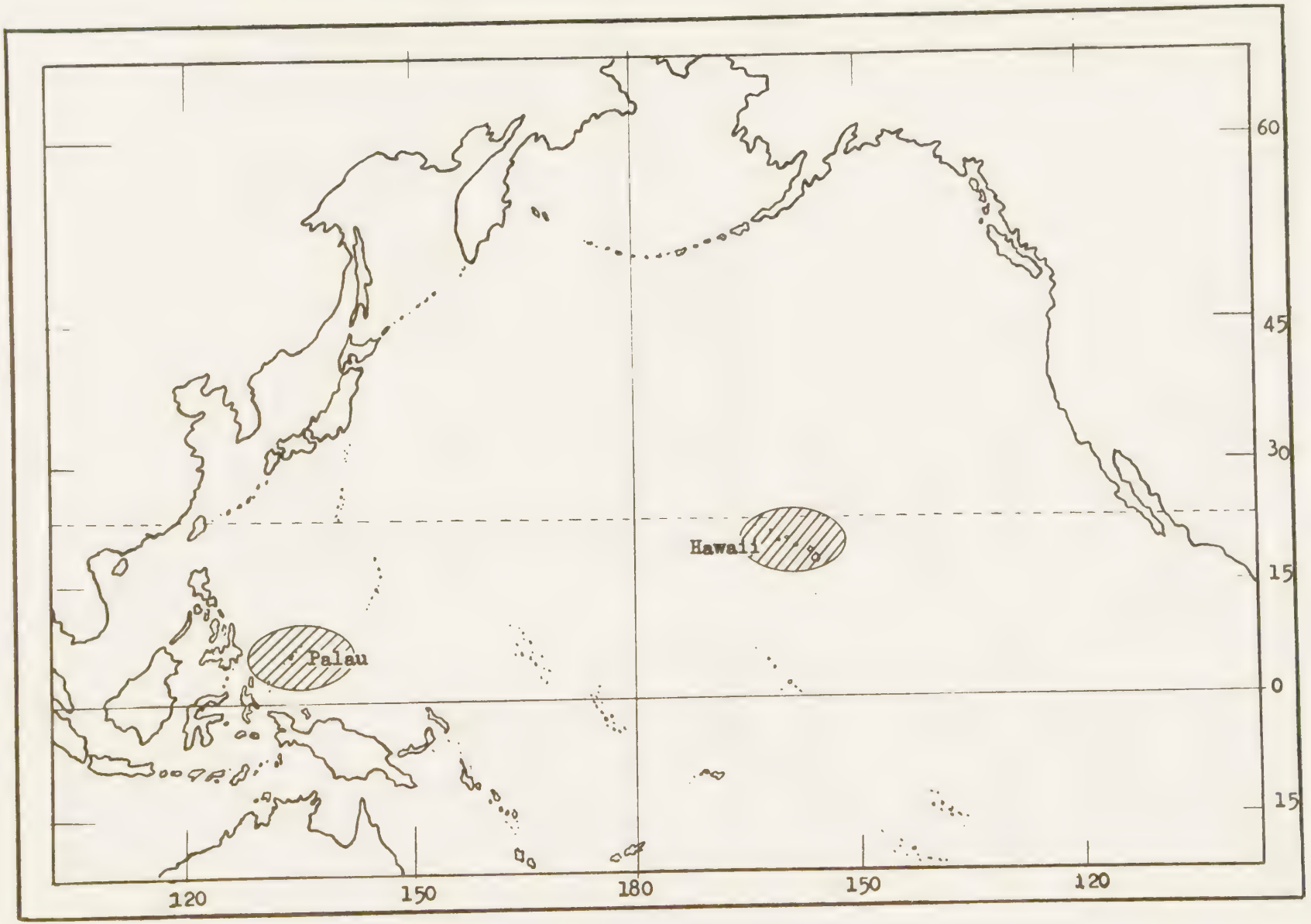
COUNTRY : U.S.A.

TITLE OF INSTITUTION : U.S. Bureau of Commercial Fisheries
Biological Laboratory
P.O. Box 3830
Honolulu, Hawaii 96812

TITLE OF PROGRAMME	Tuna Tagging
Current	1953 to date
Projected	Indefinite
Estimated annual cost	$30,000
Sponsoring body(ies)	Bureau of Commercial Fisheries
Area of Marking	Vicinity of the Hawaiian Islands; around Palau in the Western Caroline Islands; high seas of the central Pacific Ocean

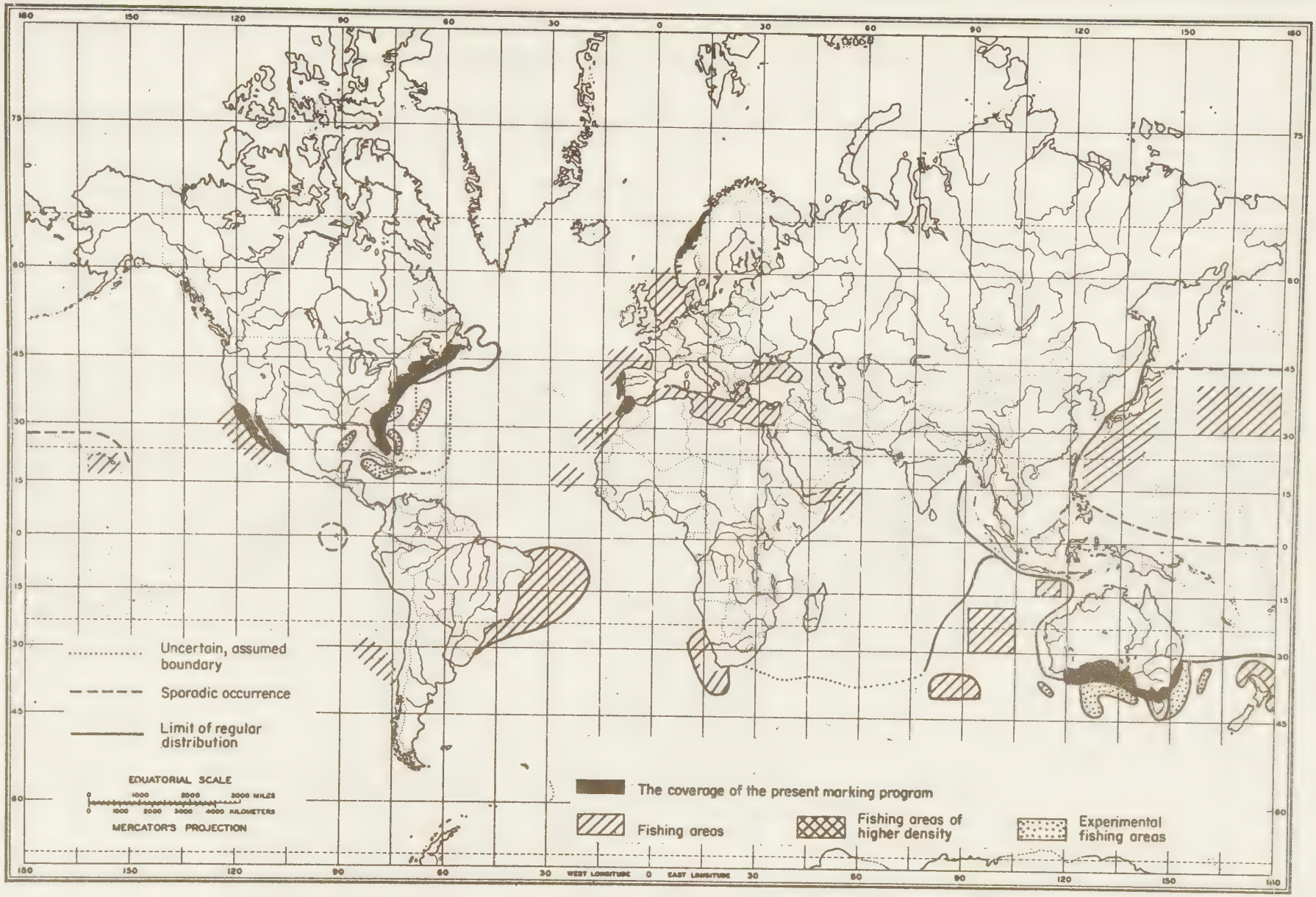
SUBJECT MATTER STUDIED

SPECIES MARKED	
Thunnus albacares	Estimation of mixing, dispersal, migration, and stock identification. Estimation of growth.
Thunnus obesus	- do -
Thunnus alalunga	- do -
Euthynnus pelamis	- do -

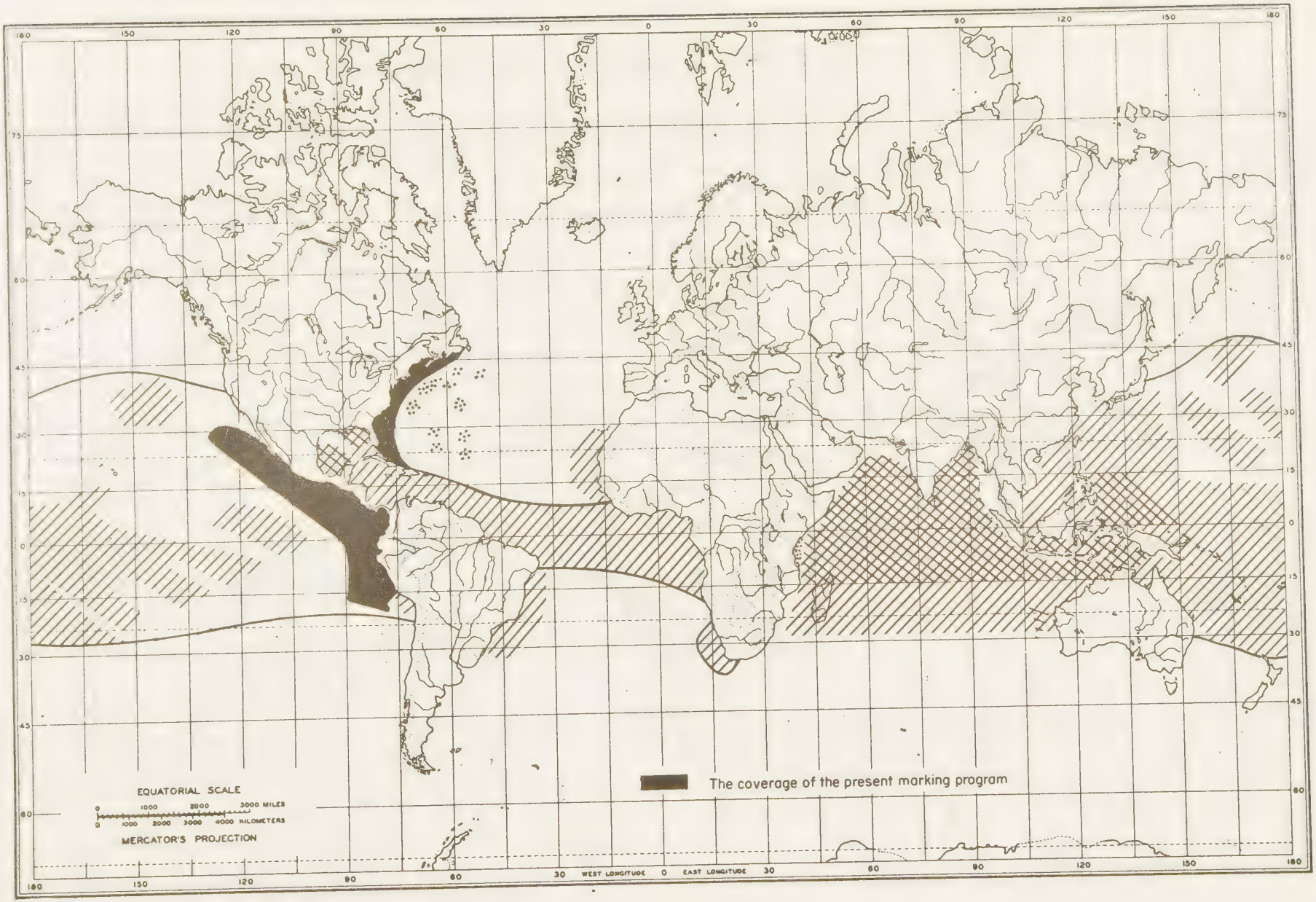


Coverage of present marking program

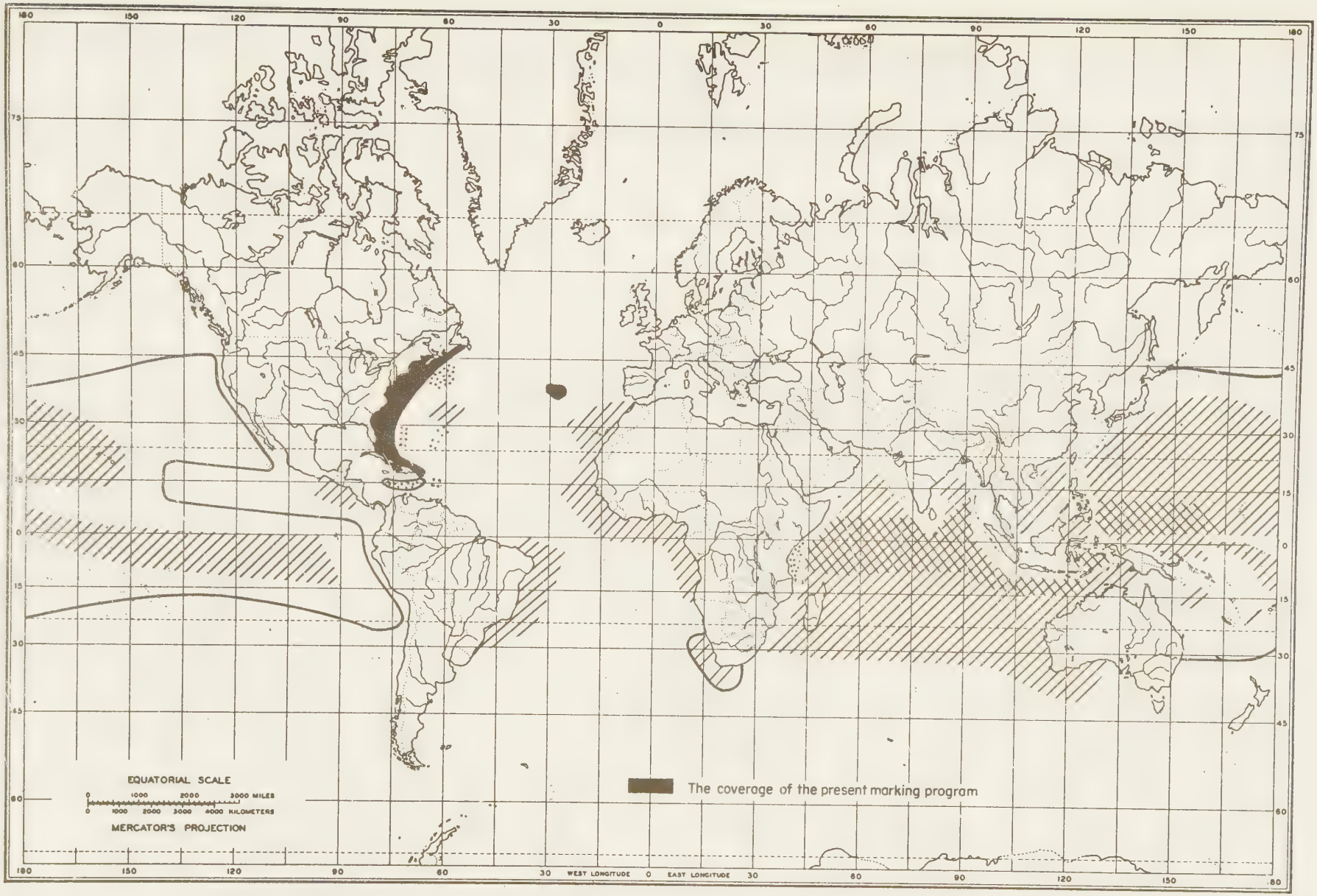
APPENDIX I



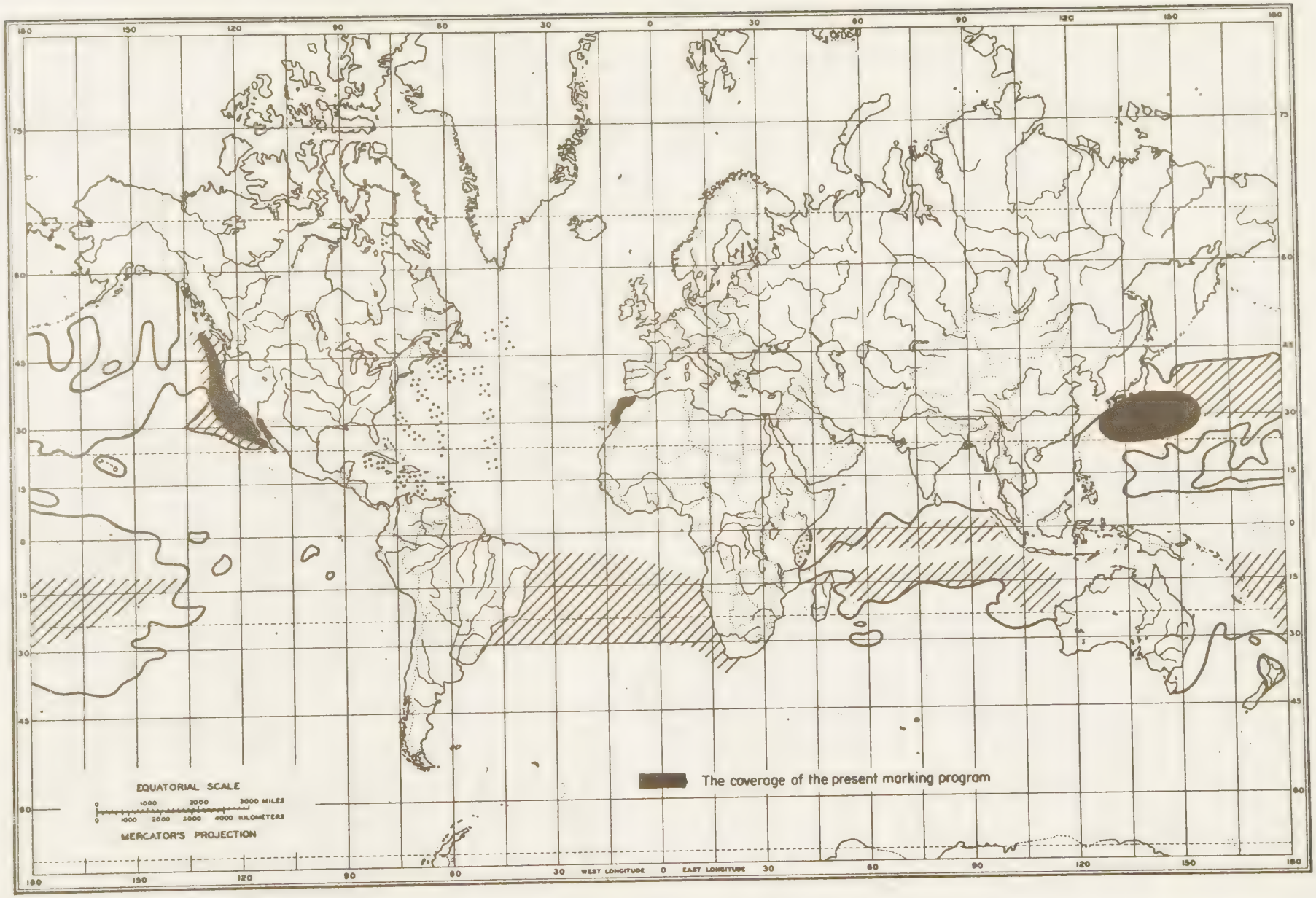
Distribution and fishing areas of bluefin tunas Thunnus thynnus and T. tonggol



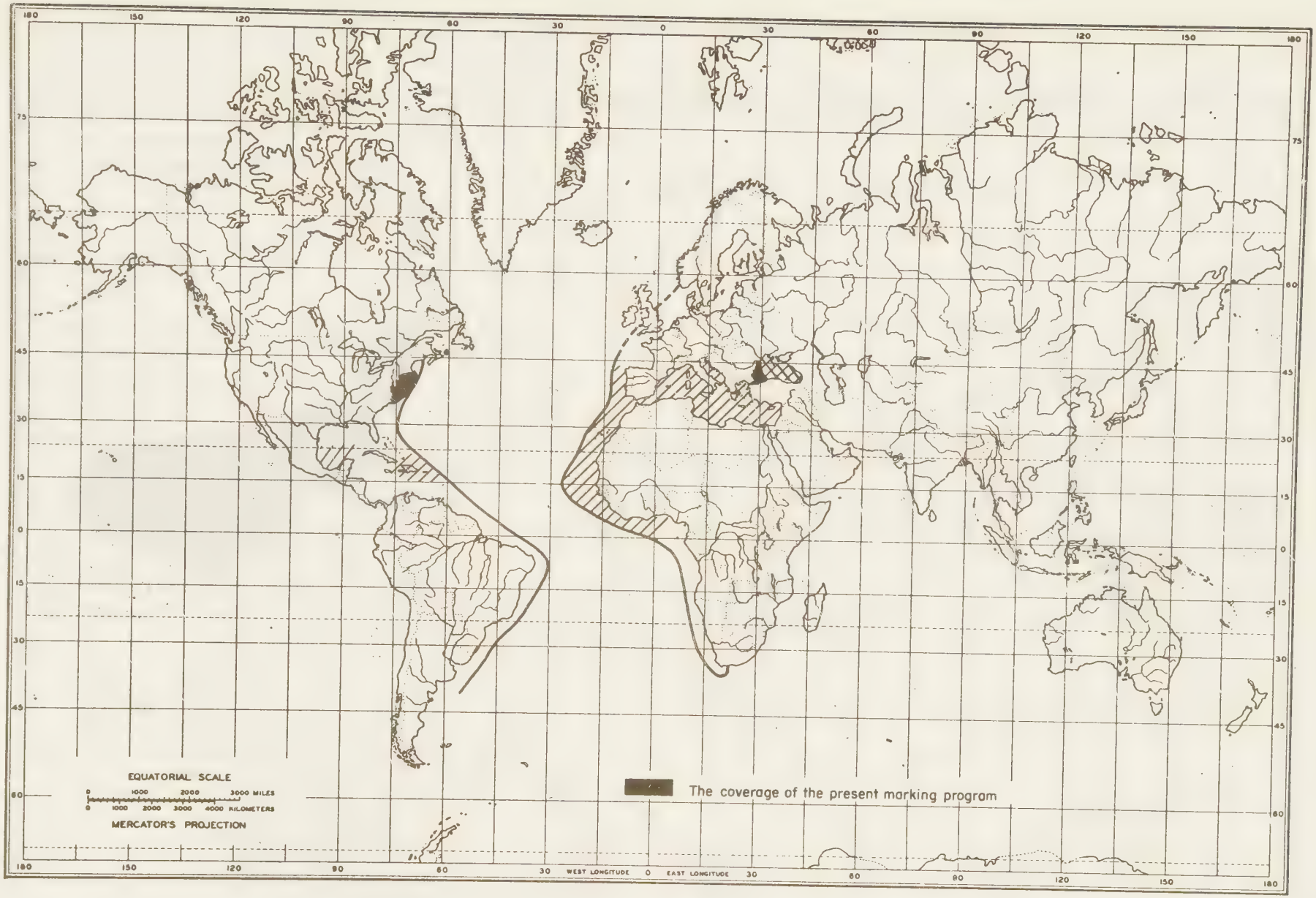
Distribution and fishing areas of yellowfin tuna Thunnus albacares



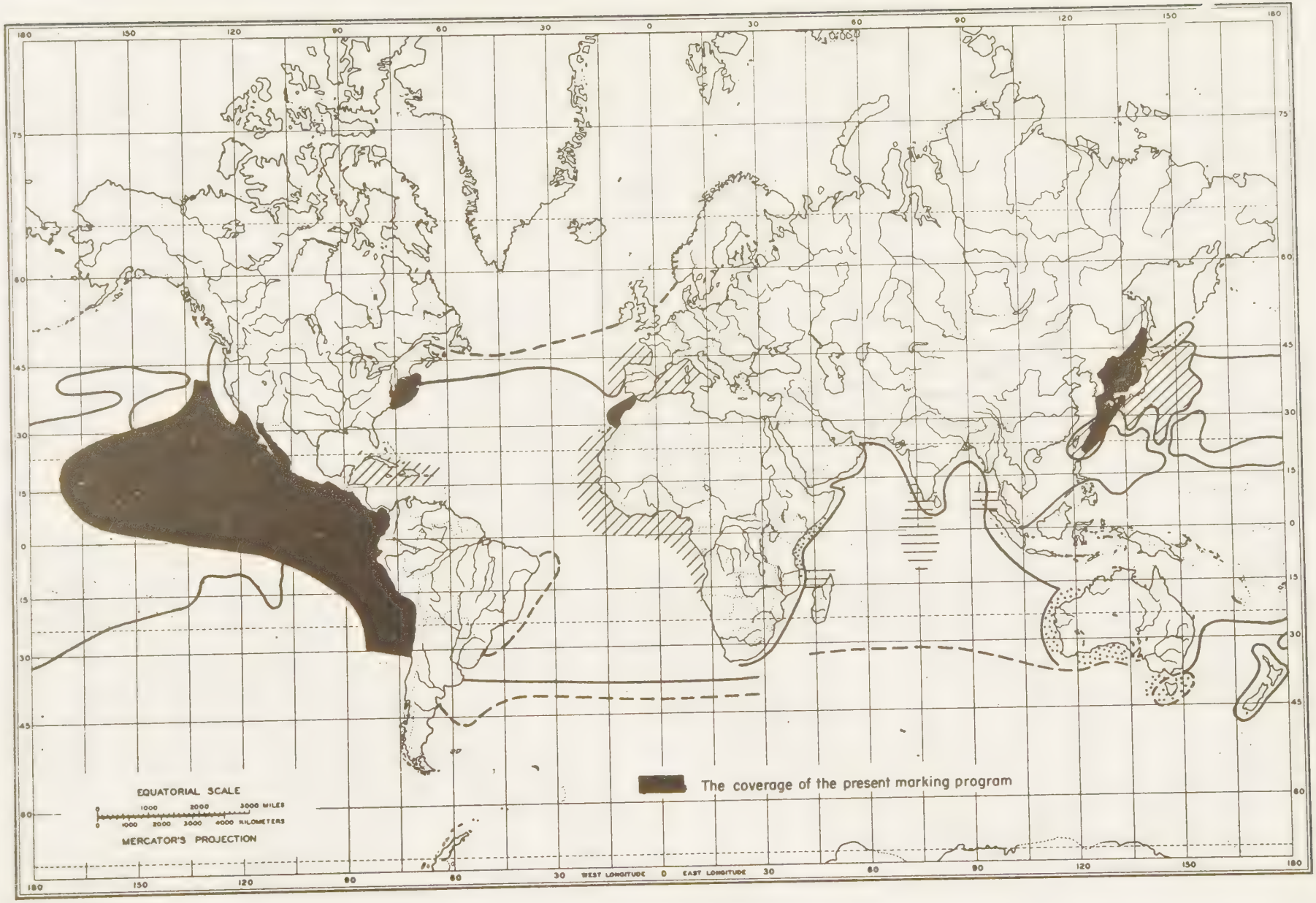
Distribution and fishing areas of bigeye tuna Thunnus obesus



Distribution and fishing areas of albacore Thunnus alalunga



Distribution and fishing areas of bonitos Sarda sarda



Distirbution and fishing areas of skipjack Euthynnus pelamis

INDEXES

LIST OF MARK MANUFACTURERS

AUSTRALIA

Arthur E. King and Co. (streamers)
Rear 135 King Street
Newton, Sydney, N.S.W.

Plastic Accessories Pty. Ltd. (darts)
24 Bowden Street
Alexandria
Sydney, N.S.W.

JAPAN

Mie Prefectural Fishery Experimental Station
Hamajima-cho
Shima-Gun, Mie-ken

Nankai Regional Fisheries Research Laboratory
6-chome, Sanbashi-dori
Kochi-shi, Japa

Tohoku Regional Fisheries Research Laboratory
1-119, Shinhamacho-3
Shiogamashi, Miyagiken

NORWAY

Institute of Marine Research
Bergen

Norsk Plastic A/S
Fredrikstad

SPAIN

Instituto de Investigaciones Pesqueras
Puerto Pesquero, Cádiz

U.S.A.

California Department of Fish and Game
California State Fisheries Laboratory
511 Tuna Street, Terminal Island Station
San Pedro

Floy Tag Manufacturing Co.
2909 N.E. Blakeley Street
Seattle, Washington 98105

INSUL-TAB Co. Inc.
160 Cross Street
Winchester, Mass.

INSUL-TAB Inc.
260 New Boston Street
Woburn, Mass. 01802

P.C. Philips Inc. (darts)
Stoughton, Mass.

Pilgrim Plastic Co. (messages)
278 Babcock Street
Boston, Mass. 02715

LIST OF PRINCIPAL OFFICES FOR RECEIVING PARTICULARS OF MARKS AND MARKED FISH

AUSTRALIA

C.S.I.R.O., P.O. Box 21, Cronulla, N.S.W.

" Field Office, c/o Kraft Cannery, Eden, N.S.W.

Field Office, Tasman Terrace, Port Lincoln, S.A.

Any State Fisheries Inspector

CANADA

Fisheries Research Board of Canada
Biological Station, St. Andrews, N.B.

Any Office of Minister of Fisheries

ITALY

Centro Sperimentale per l'Industria della Pesca, Sezione Scientifica
Via Garibaldi 136, Messina

JAPAN

Mie Prefectural Fishery Experimental Station
Hamajima-cho, Shima-Gun, Mie-ken

Nankai Regional Fisheries Research Laboratory, Fishery Agency
Japanese Government
6-chome, Sanbashi-dori, Kochi-shi

MOROCCO

Institut des Pêches Maritimes
Rue de Tiznit, Casablanca

NORWAY

Fiskeridirectoratets
Bergen

PORTUGAL

Instituto de Biologia Maritima
Cais do Sodré, Lisbon

SPAIN

Instituto de Investigaciones Pesqueras
Puerto Pesquero, Cadiz

TURKEY

Hydrobiological Research Institute
Rumelihisar, Istanbul

U.S.A.

Any Department of Fish and Game in State of California

State of Oregon Fish Commission
859 Olney Avenue, Astoria, Oregon 97103

US Bureau of Commercial Fisheries, Biological Laboratory
P.O. Box 3830, Honolulu, Hawaii 96812

LIST OF DISTINGUISHING SYMBOLS FOUND ON TUNA FISH MARKS

Symbol	Institute	Page
Cal. F & G	California Department of Fish and Game Marine Resources Operations California State Fisheries Laboratory, 511 Tuna Street Terminal Island Station, San Pedro, California	67
C.S.I.R.O.	Commonwealth Scientific and Industrial Research Organization Division of Fisheries and Oceanography P.O. Box 21, Cronulla, N.S.W., Australia	1
FRB	Fisheries Research Board of Canada Biological Station, St. Andrews, New Brunswick, Canada	17
HBL	Hawaii Biological Laboratory U.S. Bureau of Commercial Fisheries Biological Laboratory P.O. Box 3830, Honolulu, Hawaii 96812	97
ISTANBUL	Hydrobiological Research Institute, Faculty of Science University of Istanbul, Rumelihisar, Istanbul, Turkey	59
SIRIO	Societa Informazioni Ricerche Ittiche Oceanografiche Via Vigoni 11, Milano, Italy	23

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	53-58	54201
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	79-96	23601

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Laevastu, T. and H. Rosa, Jr., 1963 — Distribution and relative abundance of tunas in relation to their environment. FAO Fish.Rep., (6)vol.3:1835-51

Rais, 1965 — Con la Sirio un mare da scoprire. I pesci col distintivo. Mondo sommerso, 7(4):471-3

Rodríguez-Roda, J., 1964 — Biología del atún, Thunnus thynnus (L.), de la costa sudatlántica de España. Investigación pesq., 25:33-146

_____, 1964 — Talla, peso y edad de los atunes, Thunnus thynnus (L.), capturados por la almadraba de Barbate (costa sudatlántica de España) en 1963 y comparación con el período 1956 a 1962. Investigación pesq., 26:3-47